

161

Field Test in Santa Cruz
Volume 2
Figures

Cook Salomonson

SSAB

A-215.7-

FIELD TEST OF THE LINS METHOD FOR THE RECOVERY OF OIL FROM TAR SAND

Volume 2

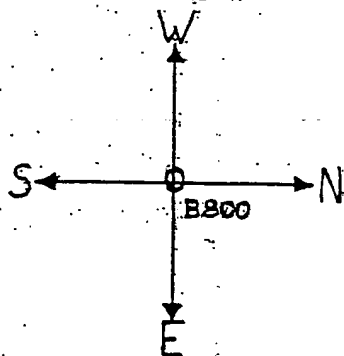
Figures

SANTA CRUZ, CALIFORNIA

Figure 1

L0-213
DEC. 20. 1957. 8P

TAR CONTENTS



HOLE POSITION IN FT FROM B800 IN L8.
SCALE: 1" = 50'.
TAR CONTENTS IN % BY WEIGHT OF DRY
TARSAND FROM 10-15 FT, 15-40 FT AND
40-45 FT, WRITTEN ABOVE THE HOLE
POSITION.

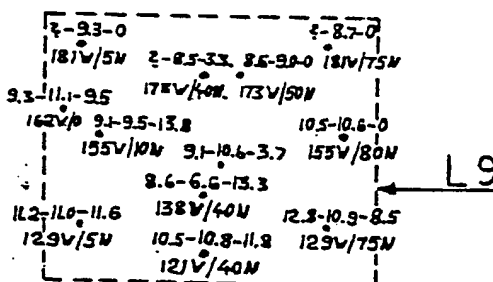
2.4-5.0-7.4
300V/200N

12.1-6.4-7.2
262V/0

9.5-7.4-12.2
190V/50S

5.0-8.5-2
200V/200N

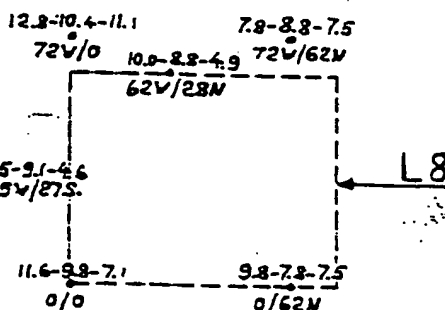
11.3-10.1-12.5
130V/55S



7.4-9.9-0
100V/200N

L6
12.6-8.3-6.6
14V/95S

L7
9.4-7.7-4.0
25V/31S
7.5-9.1-4.6
25V/27S

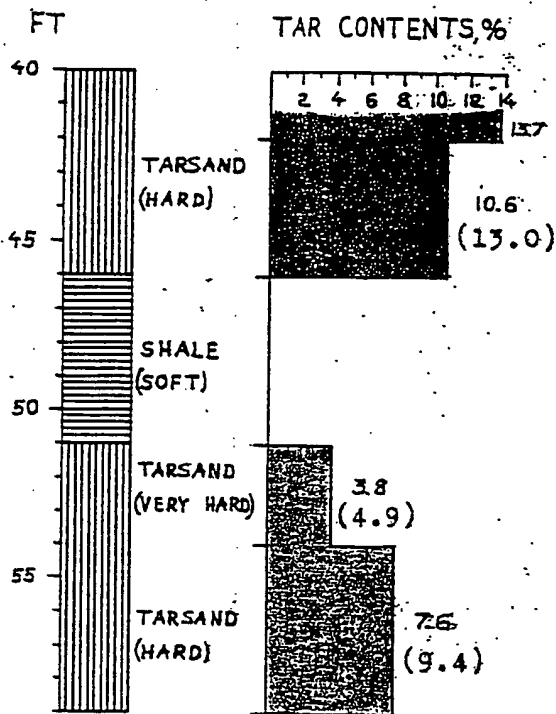
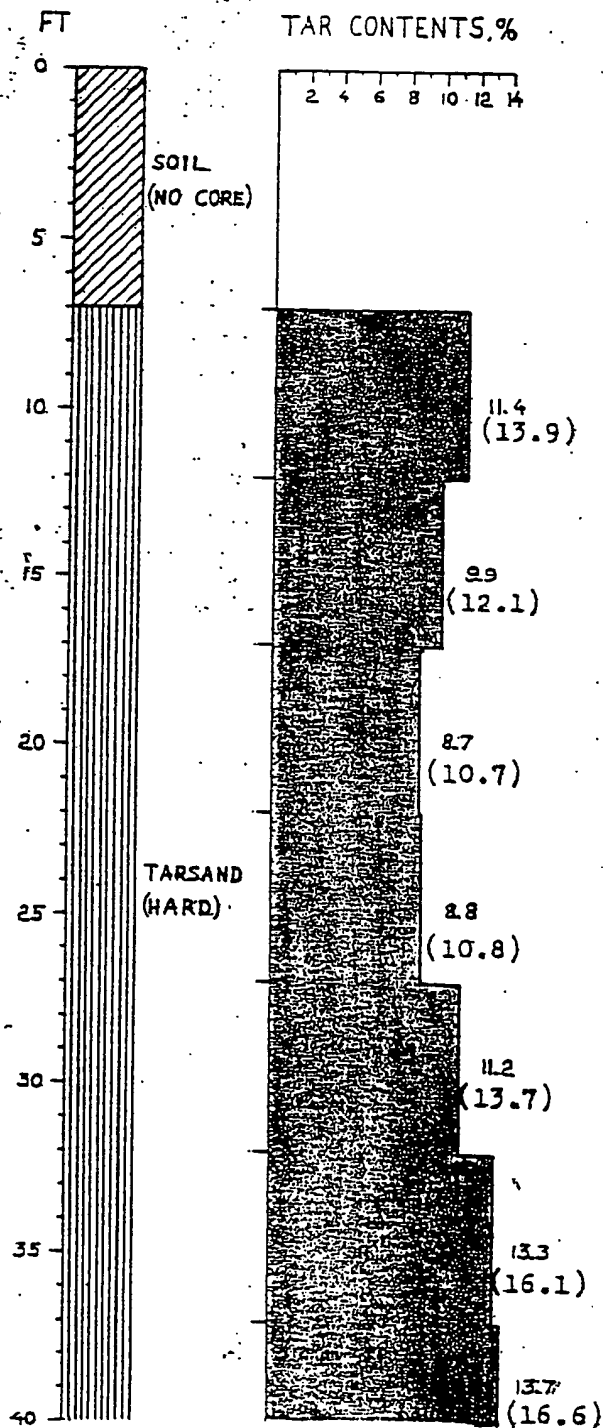


2-7.6-2.6
0/200N

L9-200
AUG. 30. 1957. 88

Figure 2

WELL LOG
121 W/40 N. (B2-5)

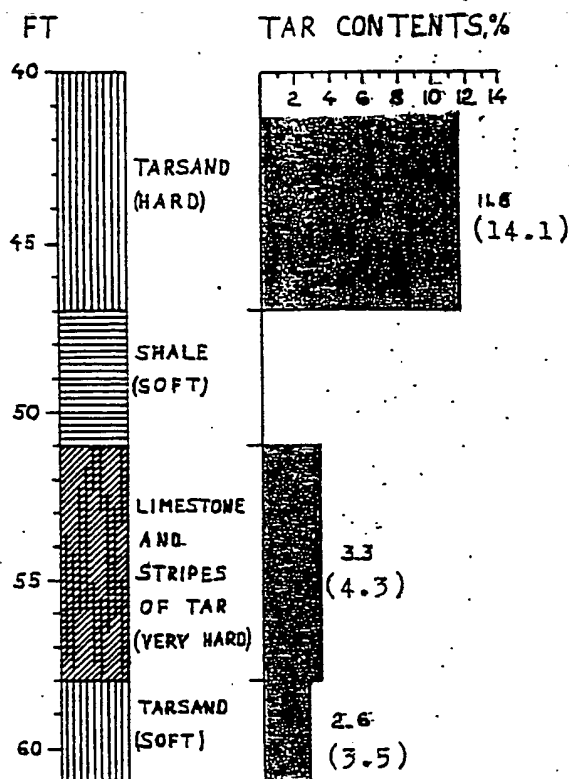
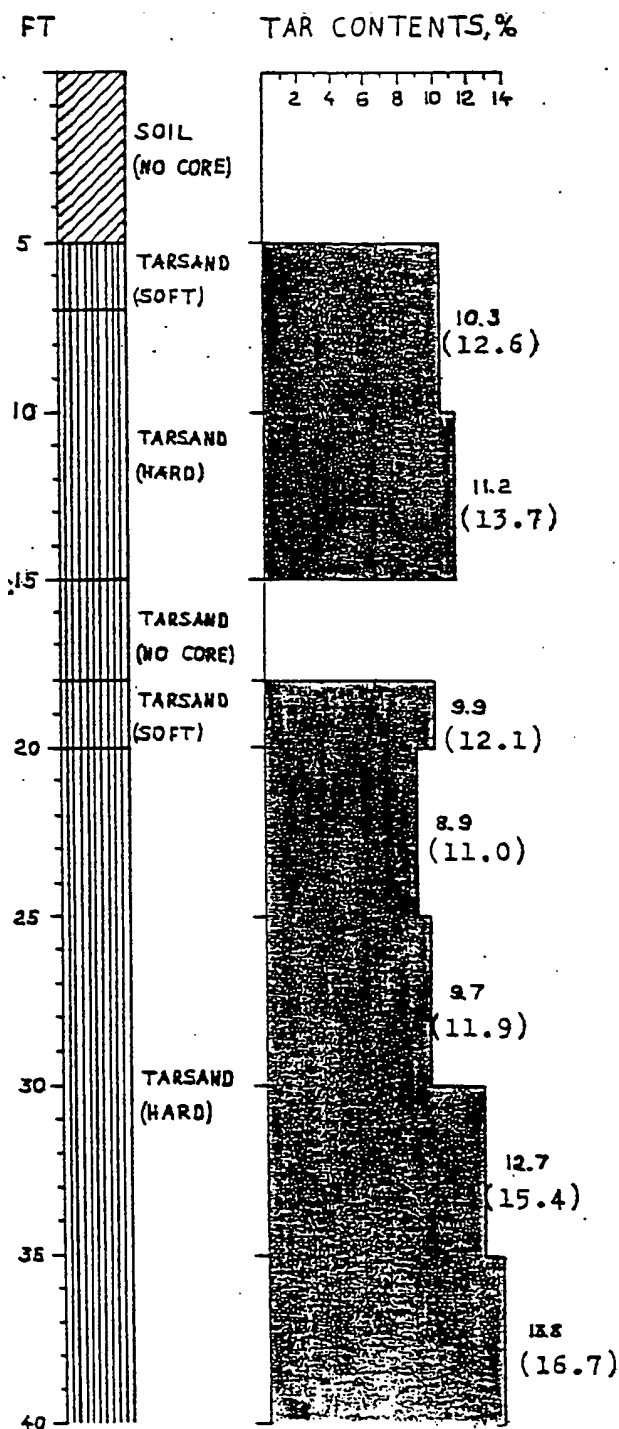


(Numbers in parenthesis are
lbs tar per cu.ft. tarsand.)

L9-201
AUG.30.1957.8P

Figure 3

WELL LOG 129 W/5 N. (B3-2)

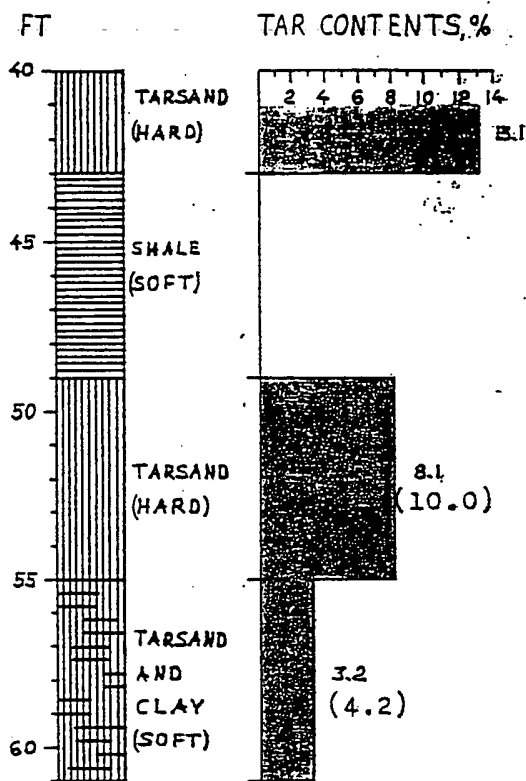
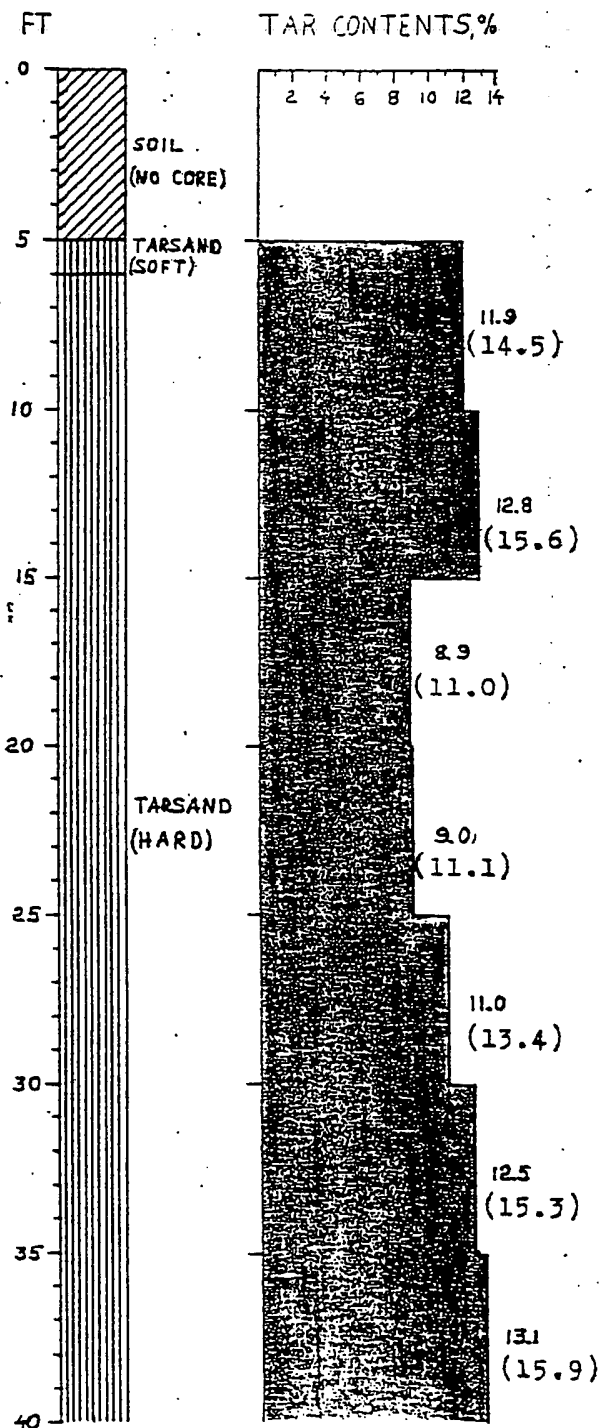


Numbers in parenthesis are
lbs tar per cu.ft. tarsand.

L9-202.
AUG.30.1957. 88

Figure 4

WELL LOG 129 W/75 N. (B3-9)



Numbers in parenthesis
are lbs tar per cu.ft.tarsand.

L9-203.
AUG.30.1957.89

Figure 5

WELL LOG

138 W/40 N. (B4-5)

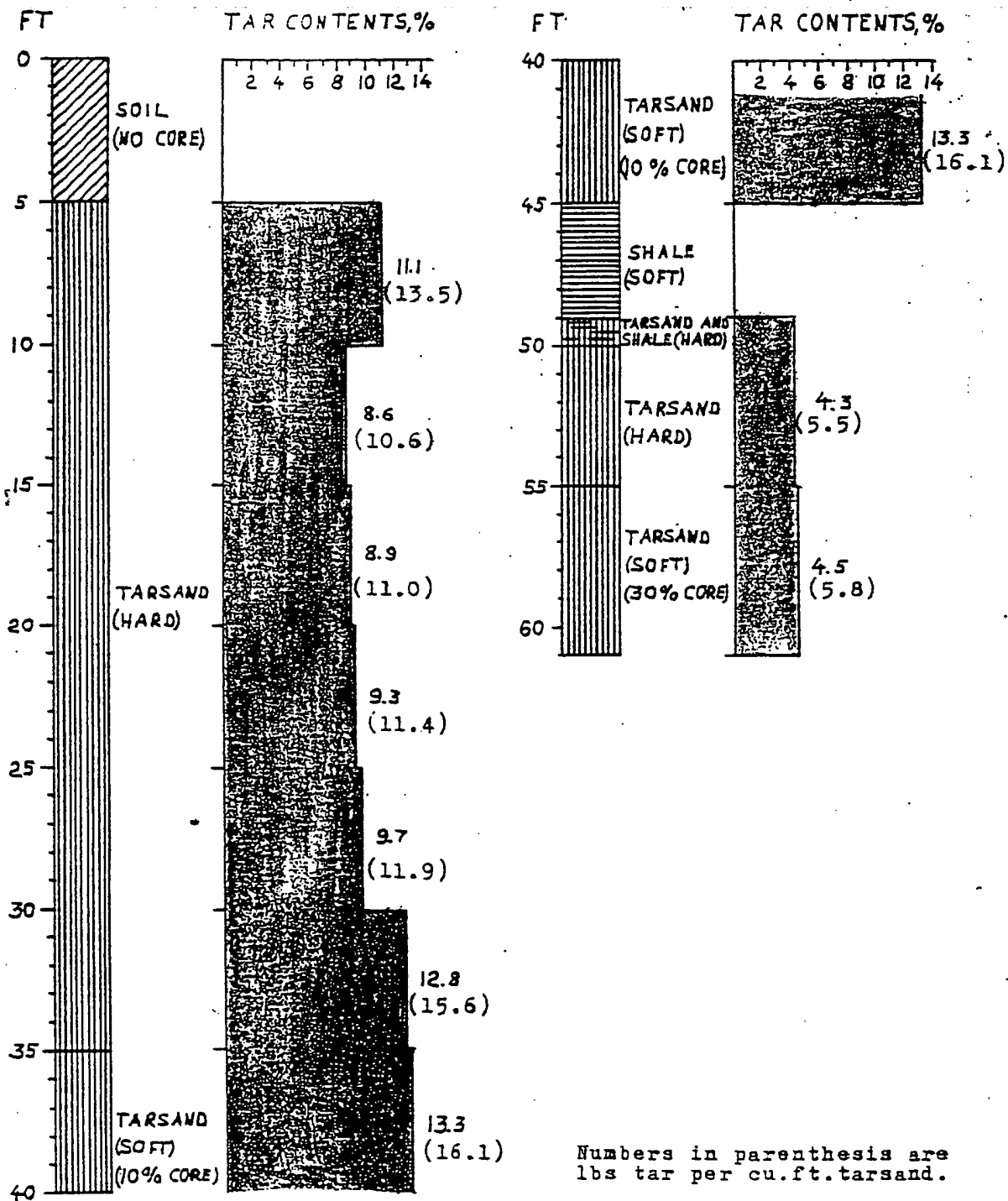
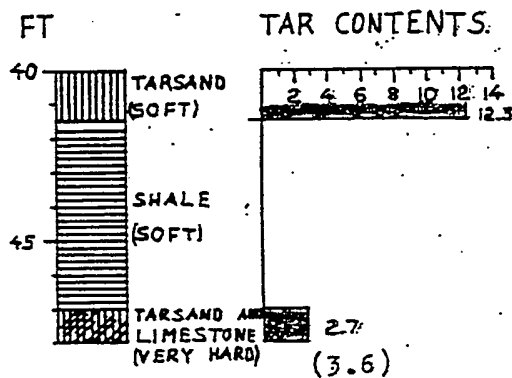
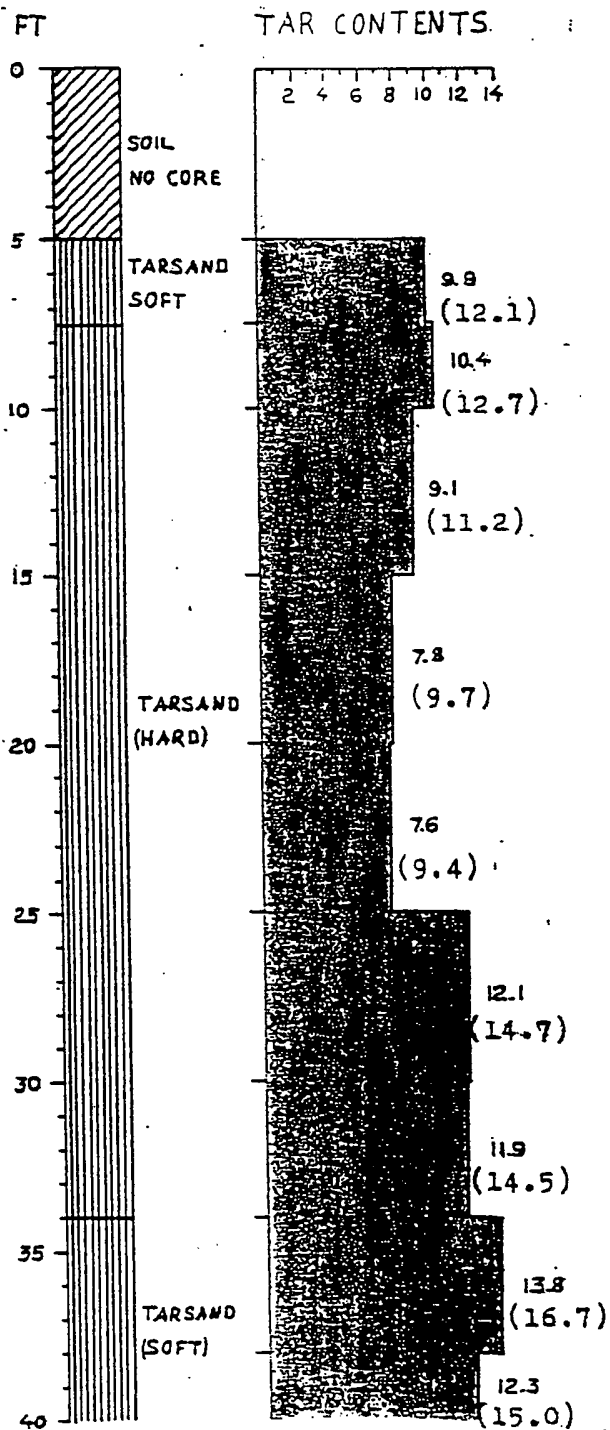


Figure 6

L9-212
OCT 18 1957 88

WELL LOG
147 W/45 N. (B5-6)



Numbers in parenthesis are
lbs tar per cu.ft. tarsand.

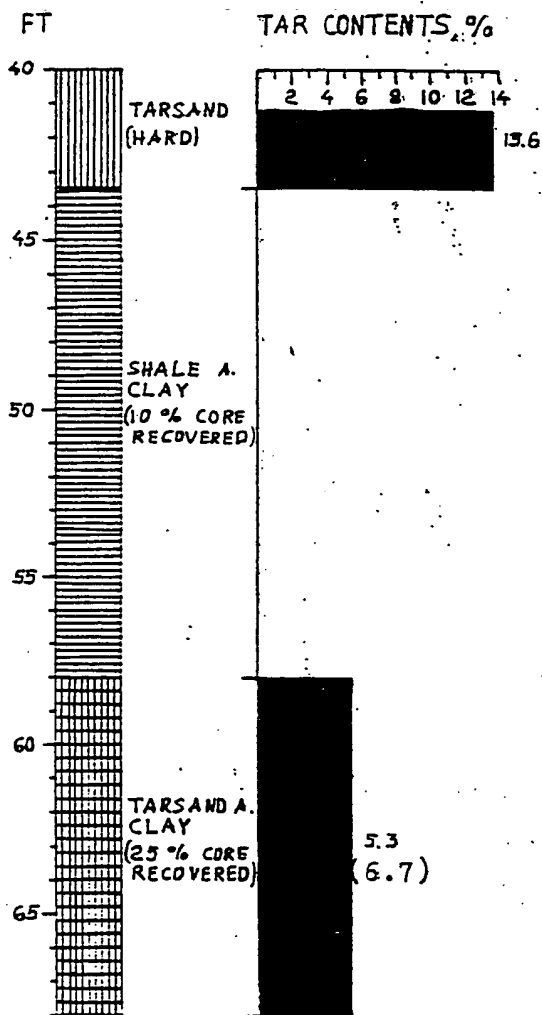
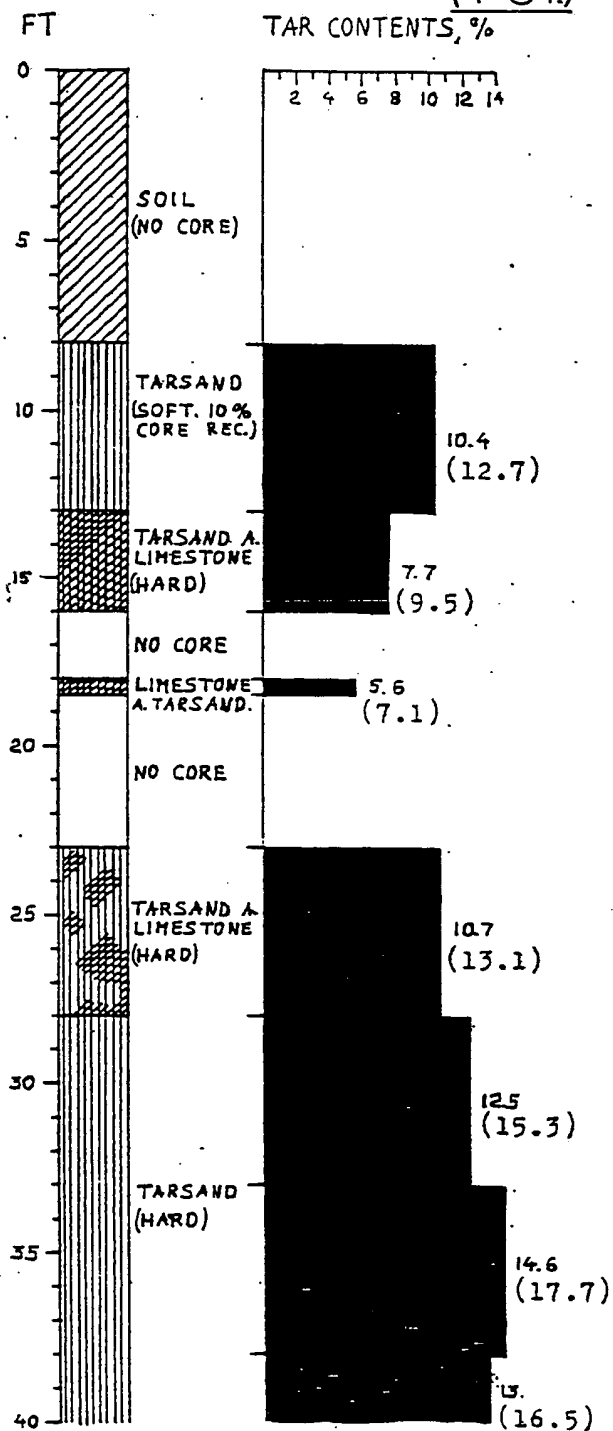
Figure 7

L9-204
1957.MAY 2. 80

WELL LOG.

162W/O.

(T61.)

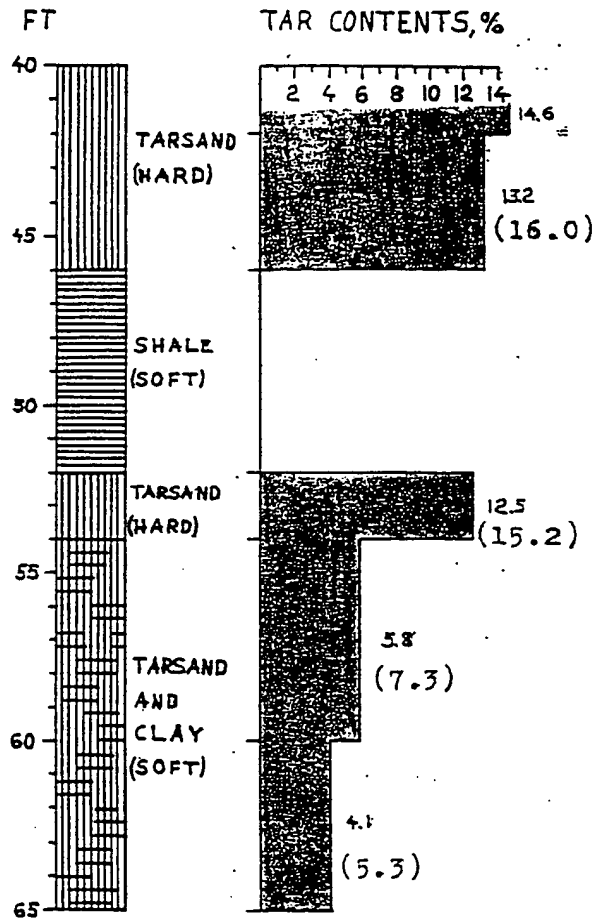
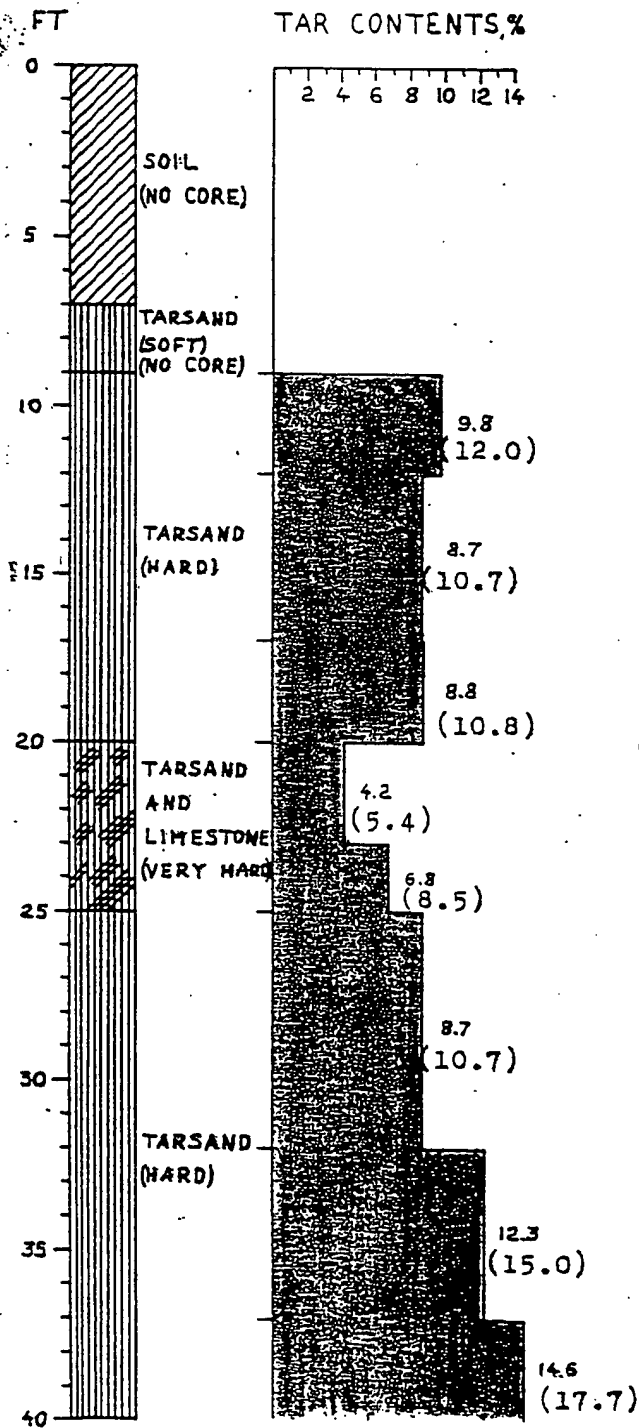


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 8

L9-205
OCT. 18. 1957. 82

WELL LOG 155 W/10 N. (B6-2.)

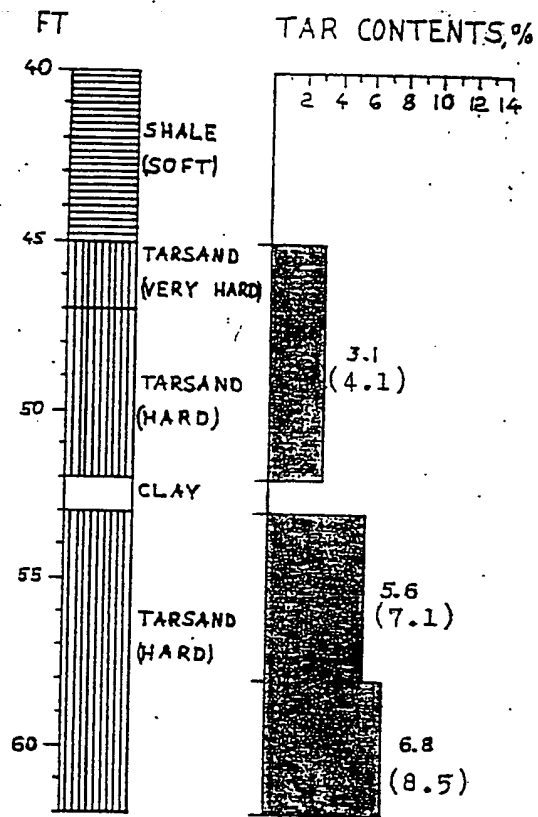
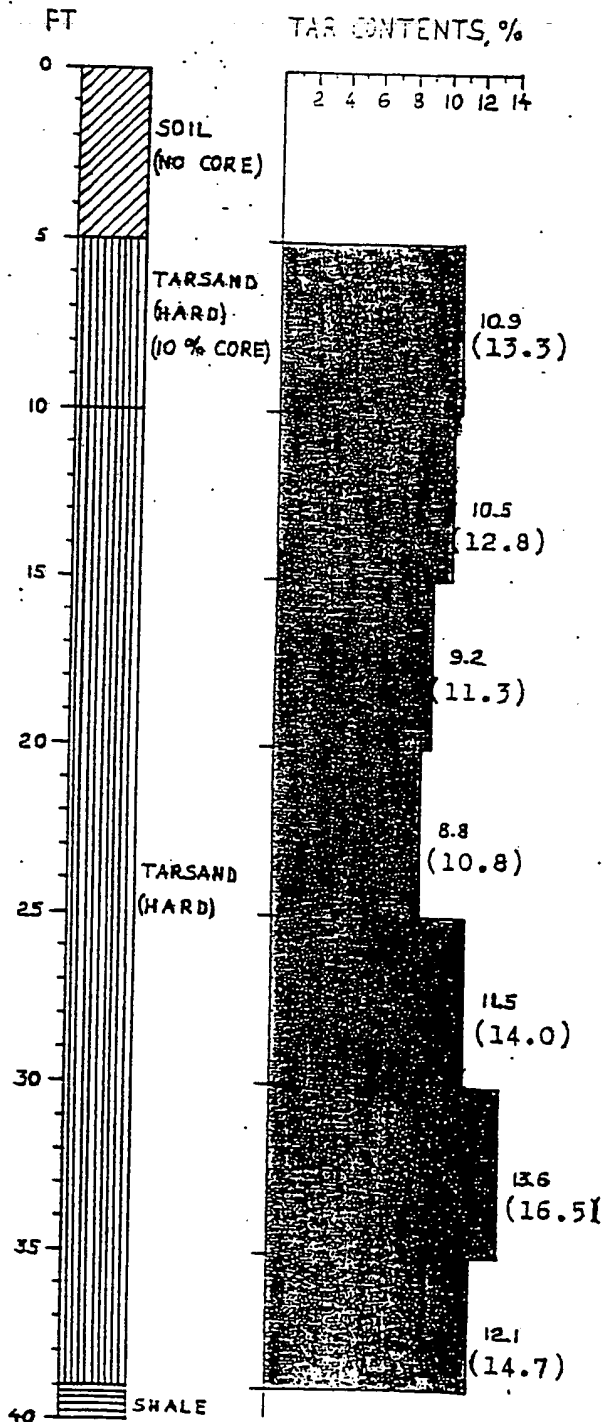


Numbers in parenthesis are
lbs tar per cu.ft. tarsand.

Figure 9

L9-206.
AUG. 30. 1957. 88.

WELL LOG
155 W/80 N. (B6-9.)

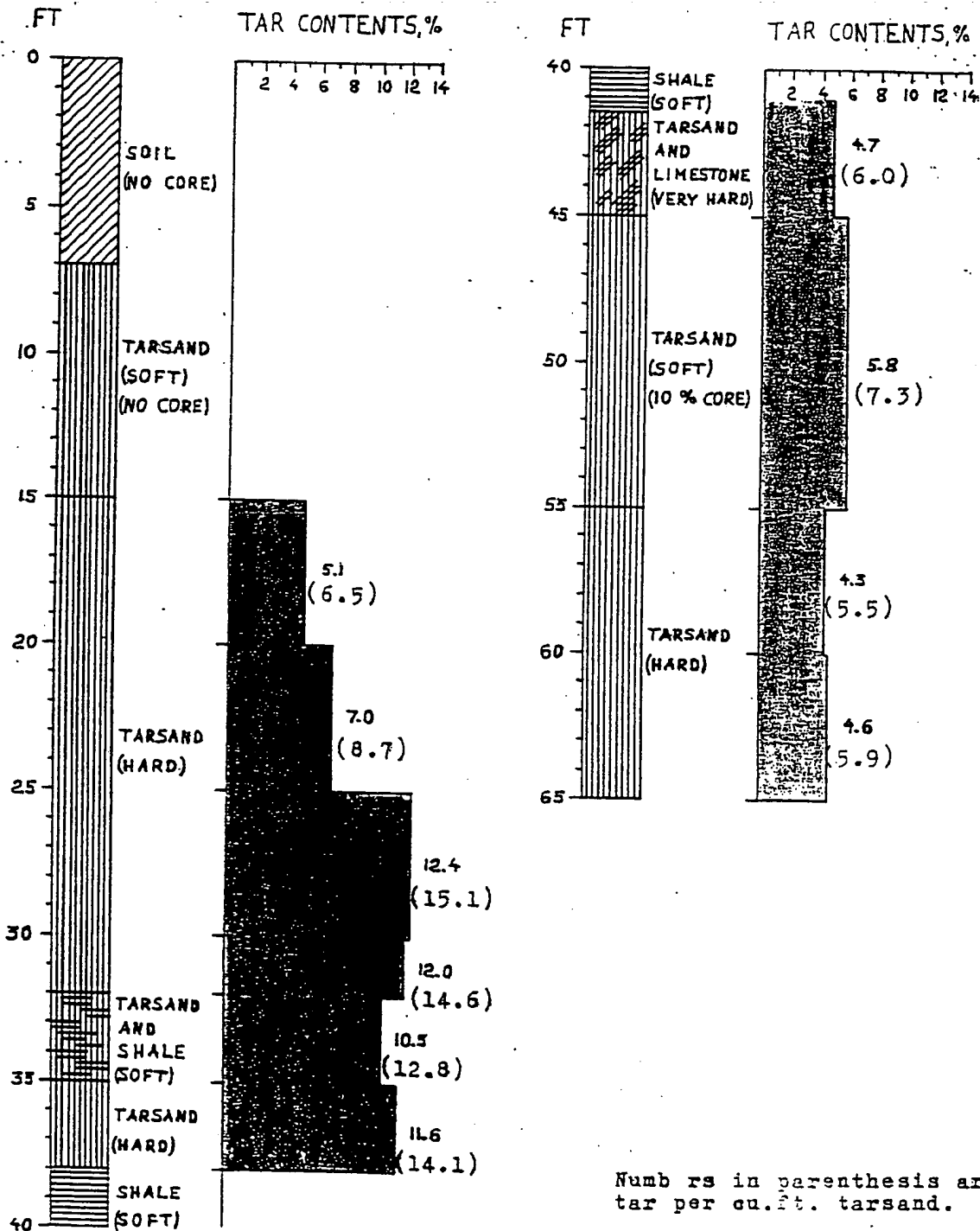


Numbers in parenthesis are lbs tar per cu. ft. tarsand.

Figure 10

L9-207.
AUG. 30. 1957. 88

WELL LOG.
173 W/40 N. (B8-5)

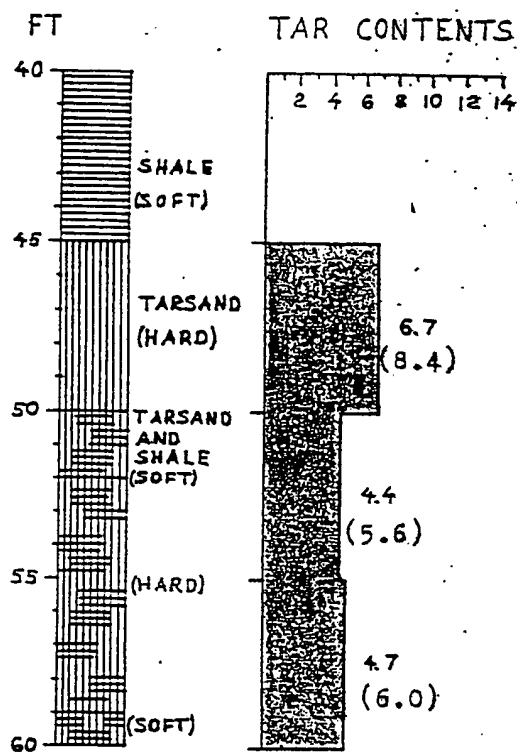
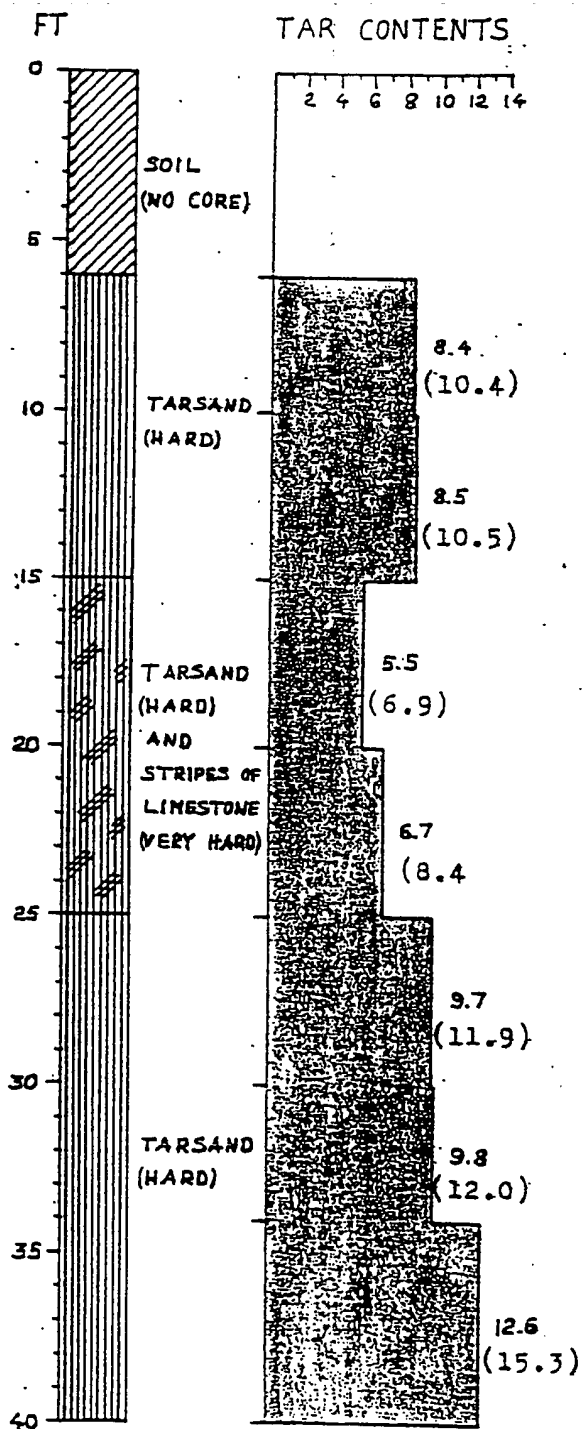


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 11

L 9-211.
OCT. 18. 1957. 22.

WELL LOG.
173 W/50 N. (B8-6)

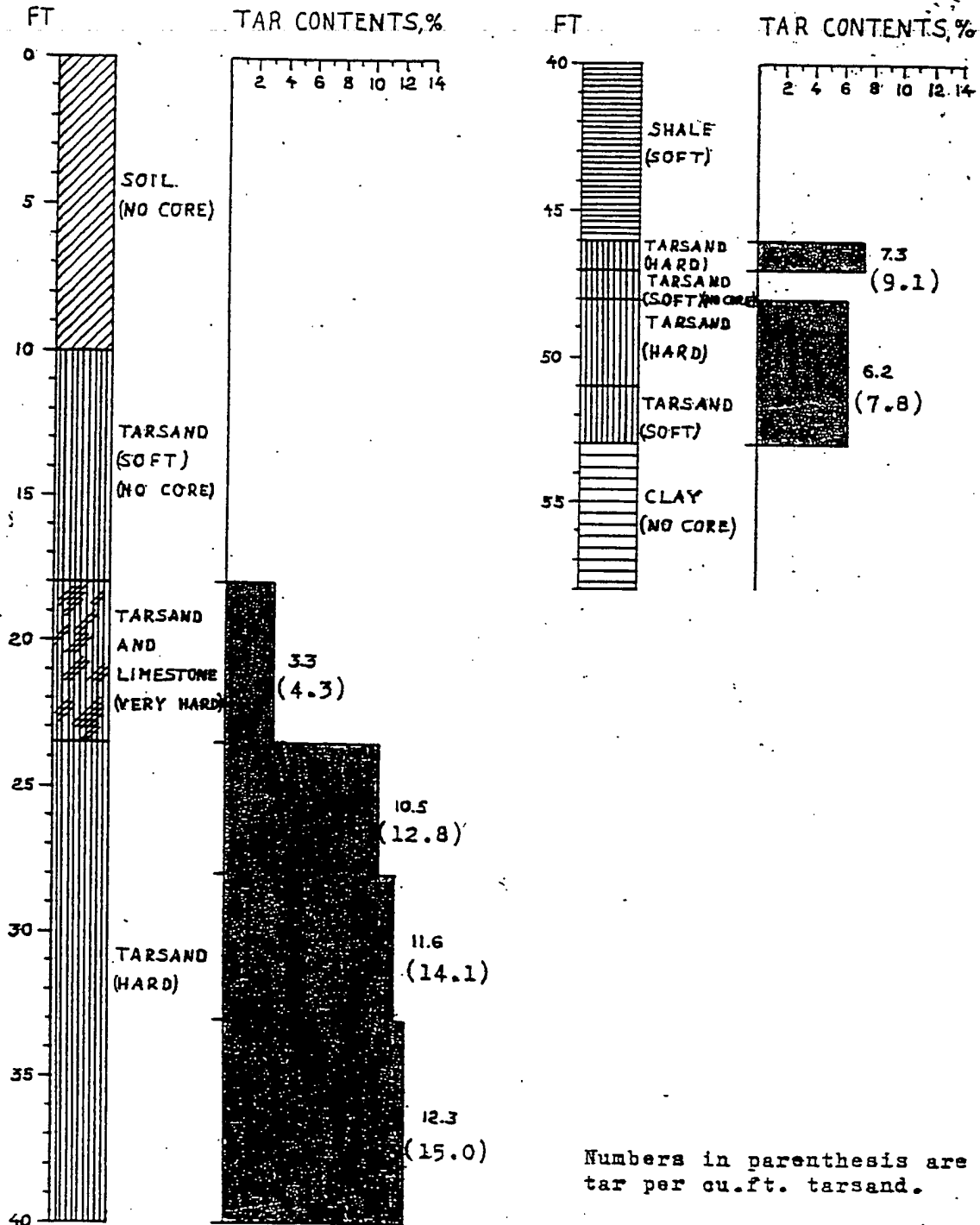


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

Figure 12

L 9-208.
OCT. 18. 1957. 8P

WELL LOG.
181 W/ 5 N. (B9-2)

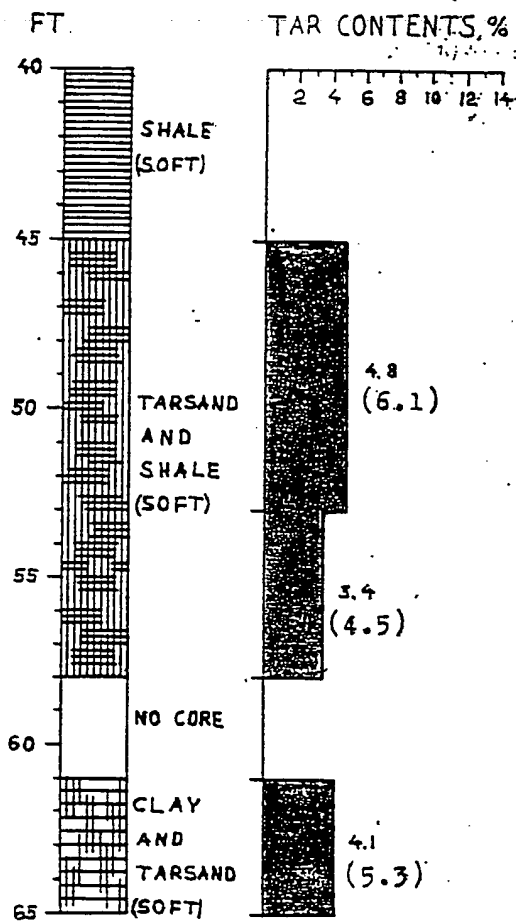
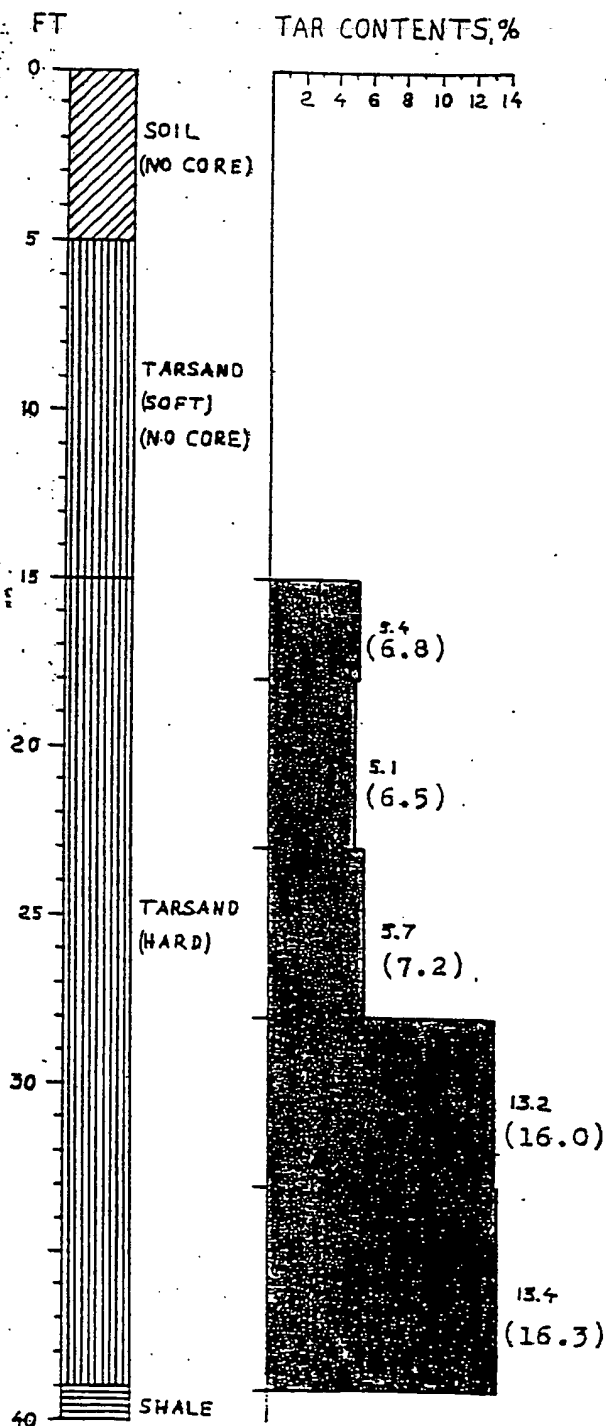


Numbers in parenthesis are lbs tar per cu.ft. tarsand.

L9-209
OCT. 18. 1957. 88

Figure 13

WELL LOG 181W/75N. (B9-9)



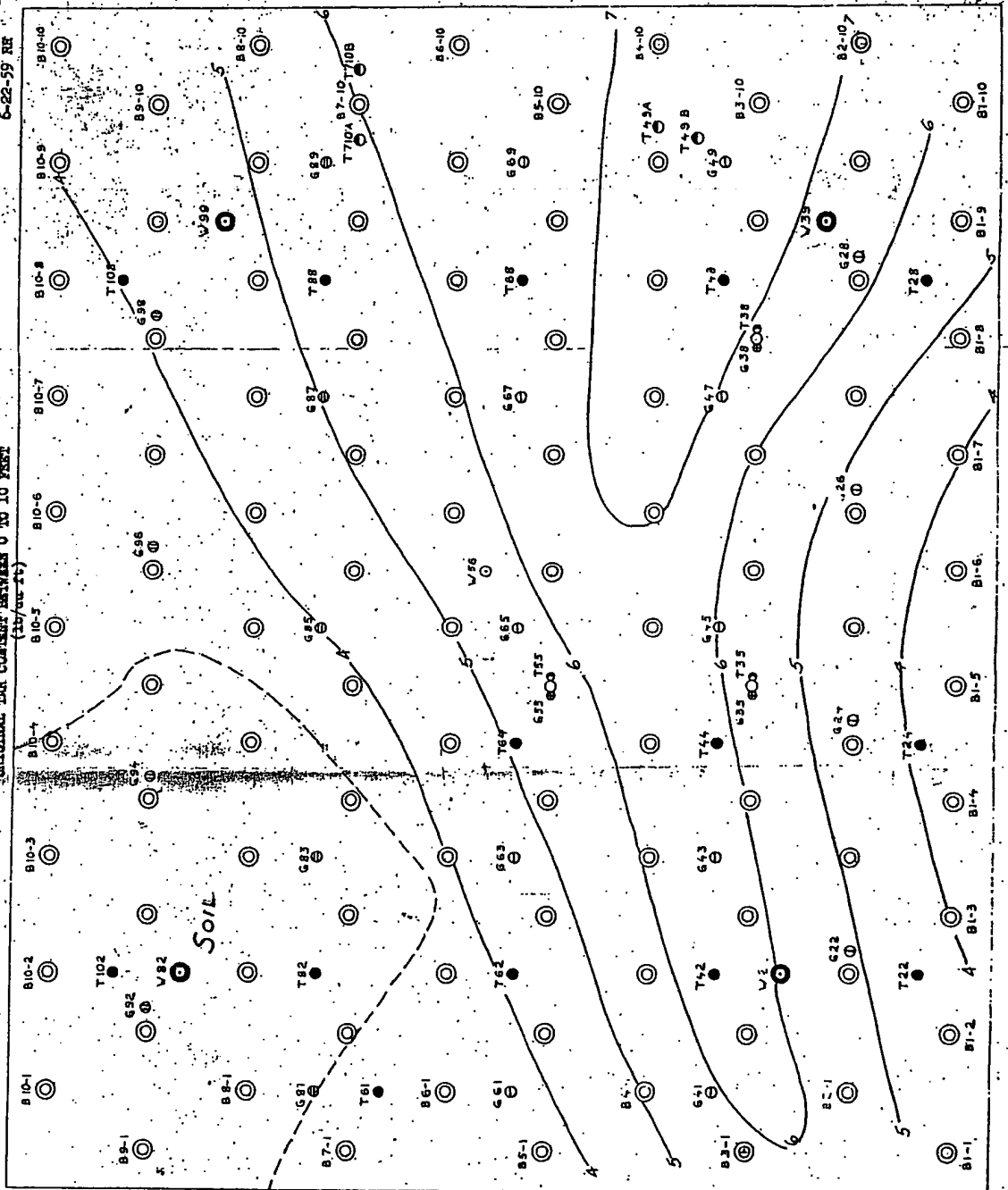
Numbers in parenthesis are lbs tar per cu.ft. tarsand.

3, (1498 4) FROM ADJACENT BURNER, 55.374 HOLE, 52.2 CASING.



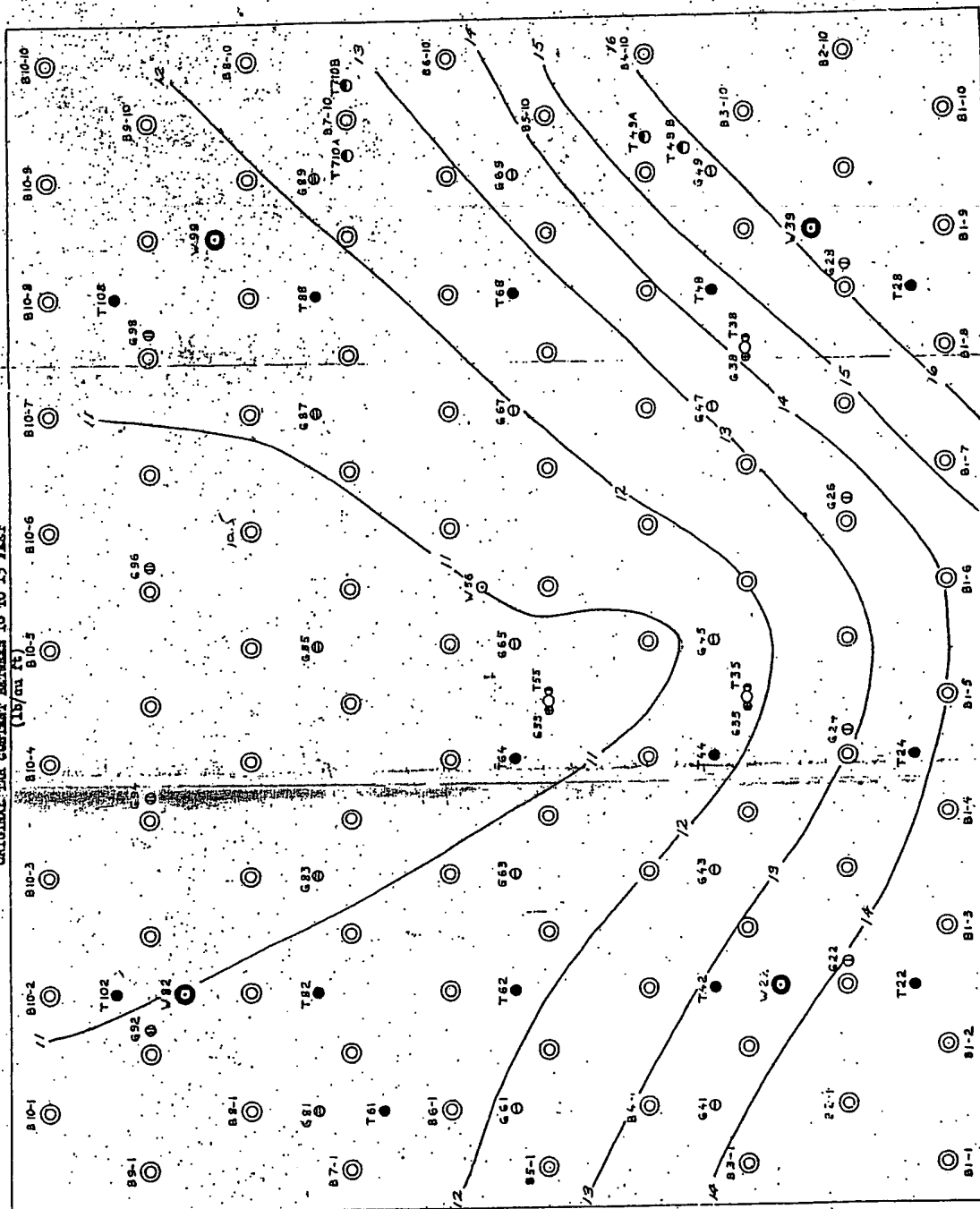
19-217-6
6-22-59 RE

ORIGINAL TAR CONTENT BETWEEN 0 TO 10 FEET
(20/100 TV)



TEMPERATURE VELL, 5.9" FROM ADJACENT BURNER, 55.33% HOLE, 52.2" CASING.
IN BURNERHOLE, 52.1" CASING.
, 3" (T49B 4") FROM ADJACENT BURNER, 55.33% HOLE, 52.2" CASING.

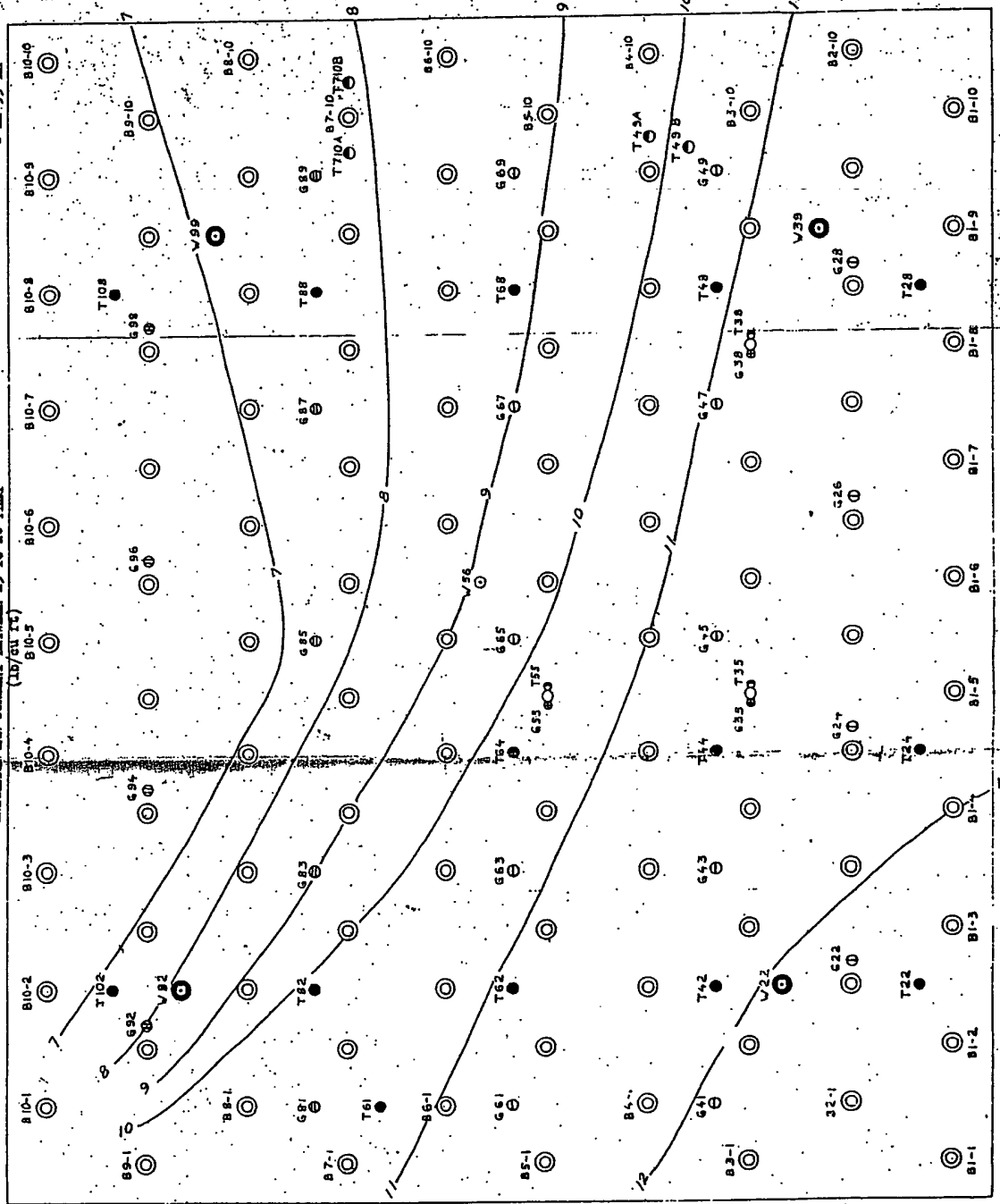
Figure 16
ORIGINAL TAR CONTENT BETWEEN 10 TO 15 FEET



TEMPERATURE VELL. 5.9' FROM ADJACENT BURNER. 55.33% HOLE. 52.2' CASING.
IN BURNER HOLE. 52.1' CASING.
3' (1498.4') FROM ADJACENT BURNER. 55.33% HOLE. 52.2' CASING.

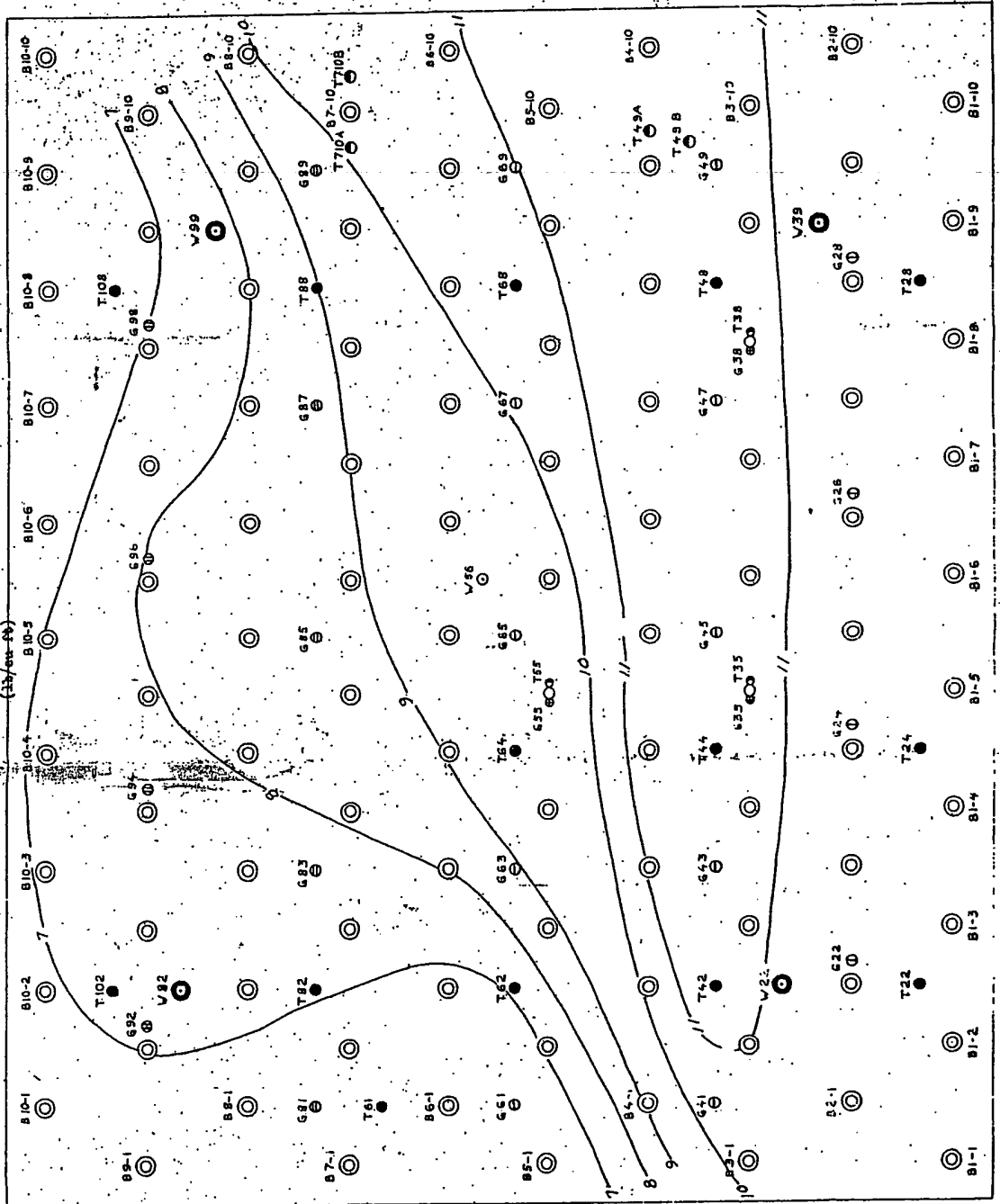
19-217-4
6-22-59 RH

Figure 17
ORIGINAL TAR CONTENT BETWEEN 15 TO 20 FEET
(15/20 TC)



● TEMPERATURE WELL 5.9" FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.
● IN BURNER HOLE. 52.1" CASING.
● 3" (T49B 4") FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.

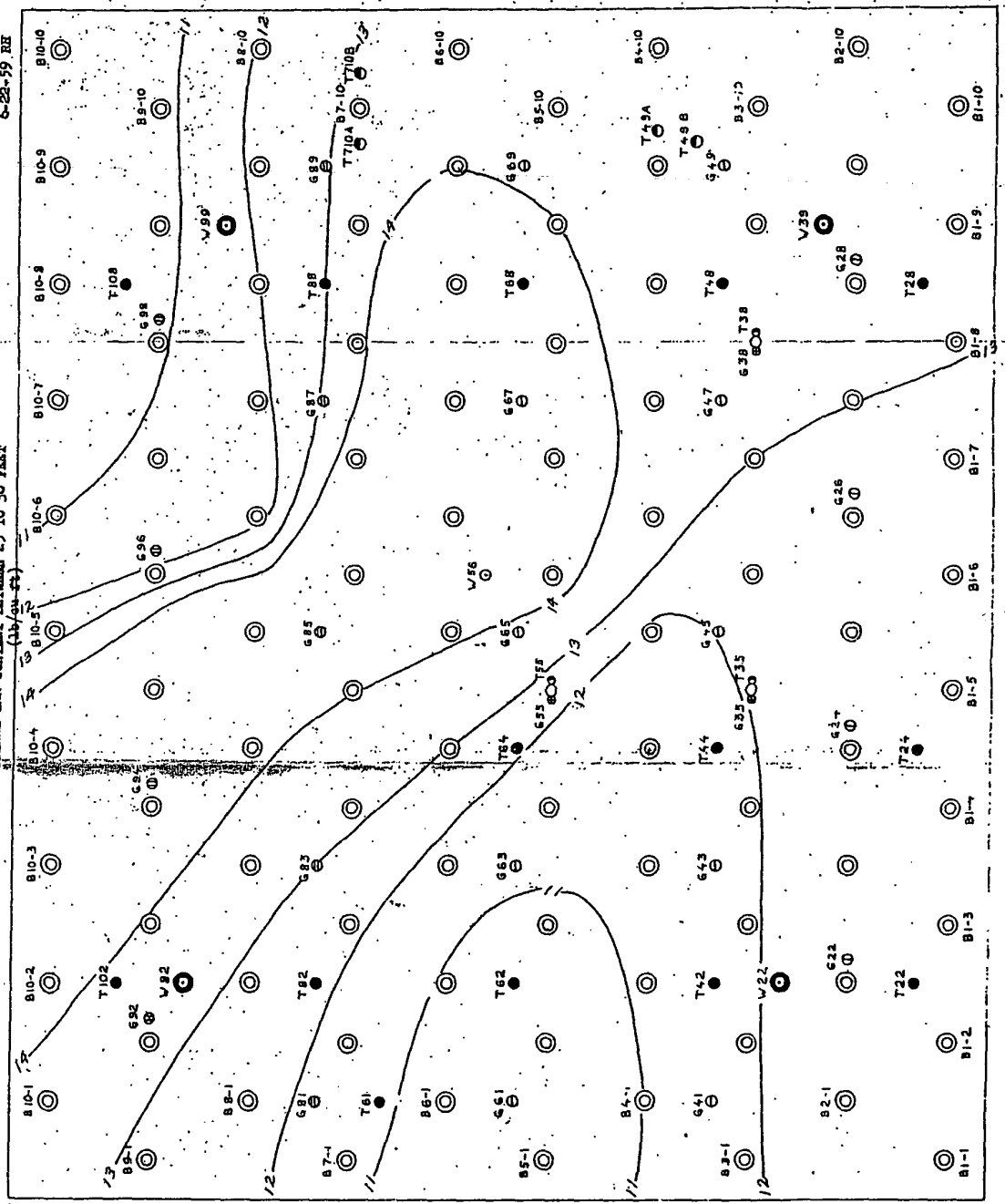
Figure 10
ORIGINAL AIR CONTENT BETWEEN 20 TO 25 FEET
(35/68-49)



● ● ● ●
● TEMPERATURE WELL 5.9" FROM ADJACENT BURNER. 55" 3/4" HOLE. 52" 2" CASING.
● IN BURNER HOLE. 52" 1" CASING.
● 3" (T49B 4") FROM ADJACENT BURNER. 55" 3/4" HOLE. 52" 2" CASING.

19-217-6
6-22-59 RE

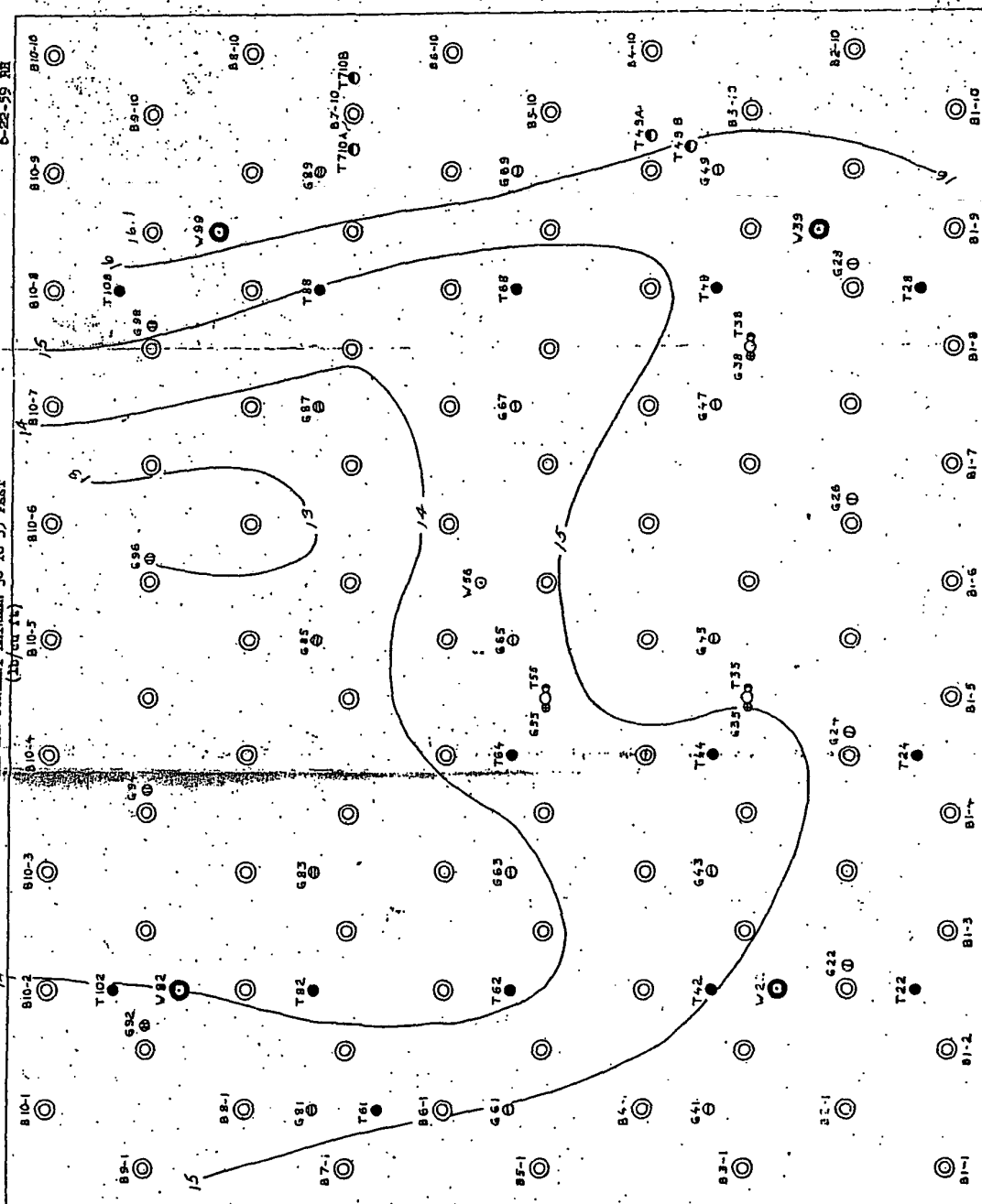
Figure 19
ORIGINAL BAR CONVENT 25 TO 30 FEET
(11/21/54)



● TEMPERATURE WELL 5.9' FROM ADJACENT BURNER. 55' 3/4" HOLE. 52' 2" CASING.
● IN BURNER HOLE. 52' 1" CASING.
● 3' (1498 4) FROM ADJACENT BURNER. 55' 3/4" HOLE. 52' 2" CASING.

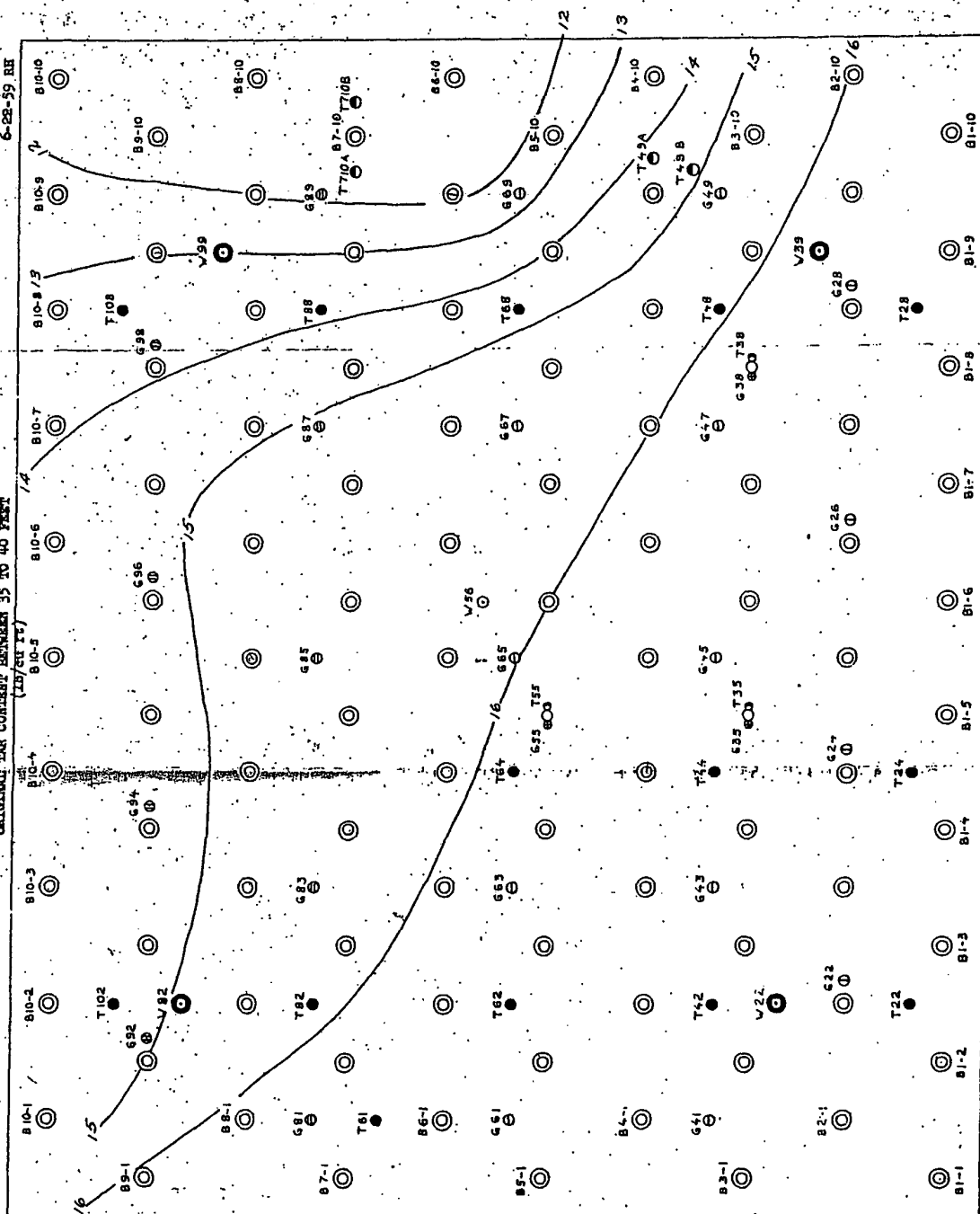
19-217-7
6-22-59 RE

Figure 20
ORIGINAL AIR CONTENT BETWEEN 30 TO 35 FEET
(20/00 11)



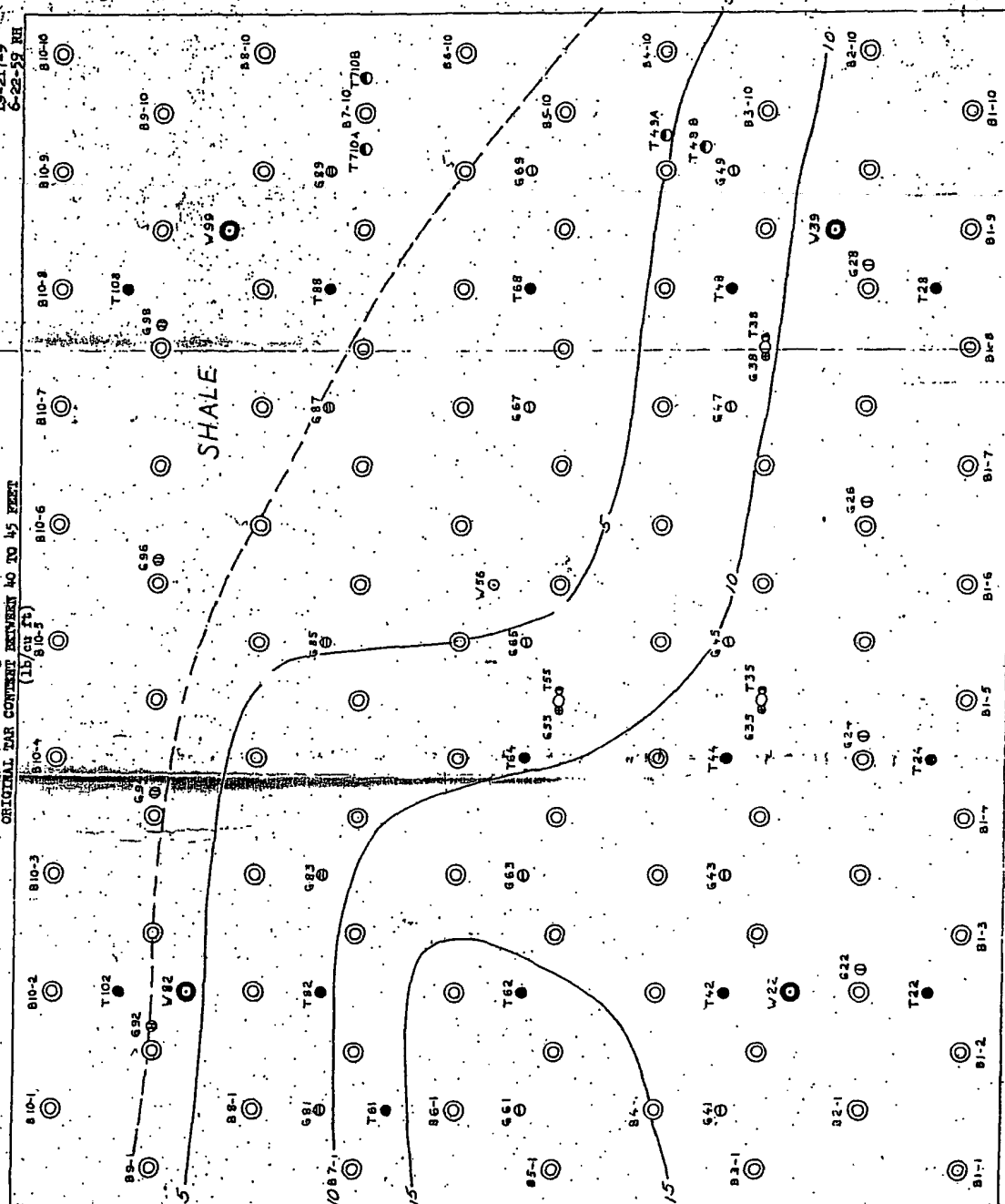
● TEMPERATURE WELL, 5.9' FROM ADJACENT BURNER, 55.3% HOLE, 52.2" CASING.
● IN BURNER HOLE, 52.1" CASING.
● (T+9B 4') FROM ADJACENT BURNER, 55.3% HOLE, 52.2" CASING.

ORIGINAL: TAR CONTENT BETWEEN 35 TO 40 PCT (22.12/87)



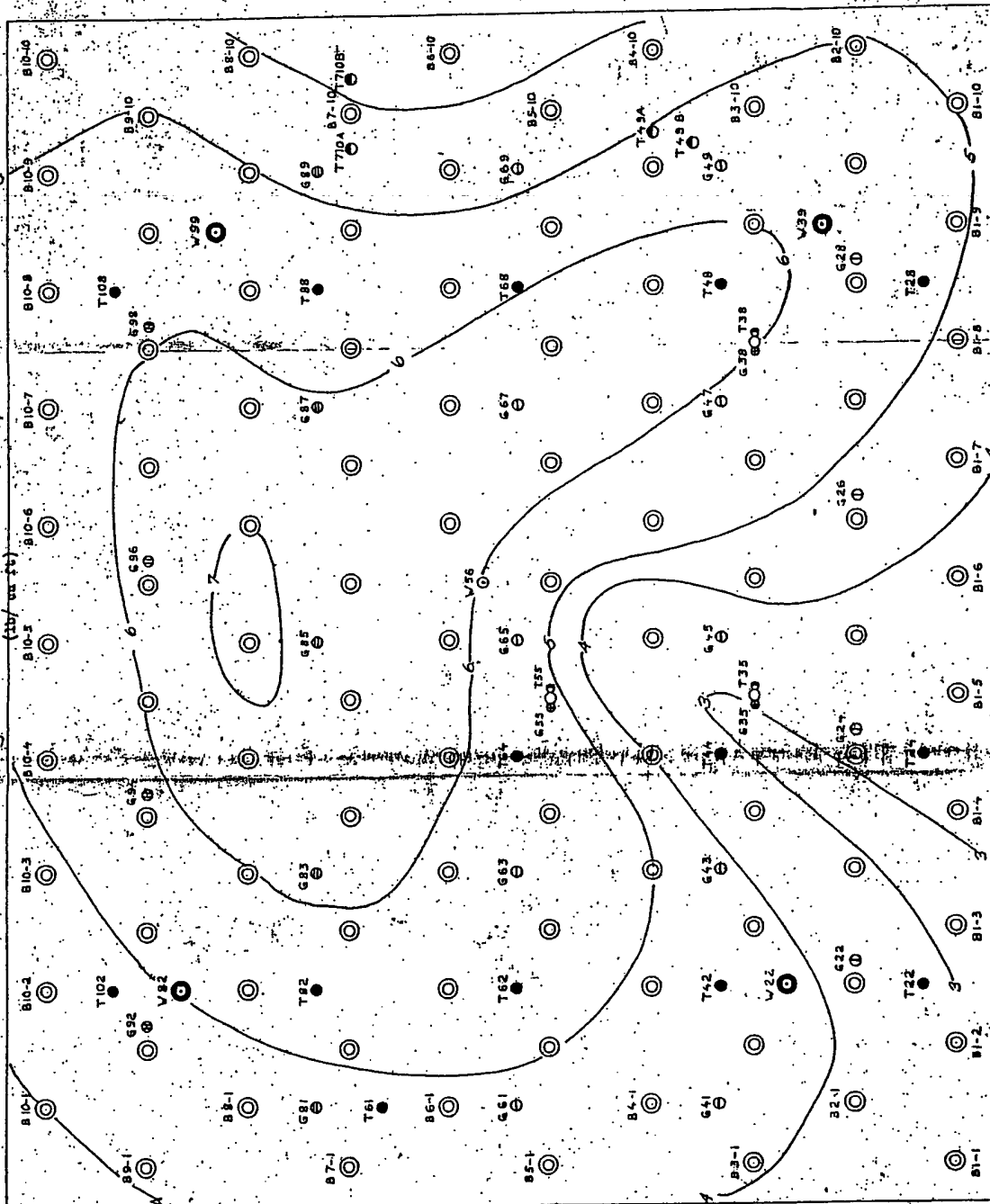
- TEMPERATURE WELL 5.9' FROM ADJACENT BURNER. 55.334" HOLE. 52.2" CASING.
- IN BURNER HOLE. 52.1" CASING.
- 1.3' (1498 4") FROM ADJACENT BURNER. 55.334" HOLE. 52.2" CASING.

ORIGINAL TAR CONTENT BETWEEN 40 TO 45 FEET
(lb/cu ft)



● TEMPERATURE VELL 5.9" FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.
● IN BURNER HOLE. 52.1" CASING.
● 3.1" (498.4" FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.

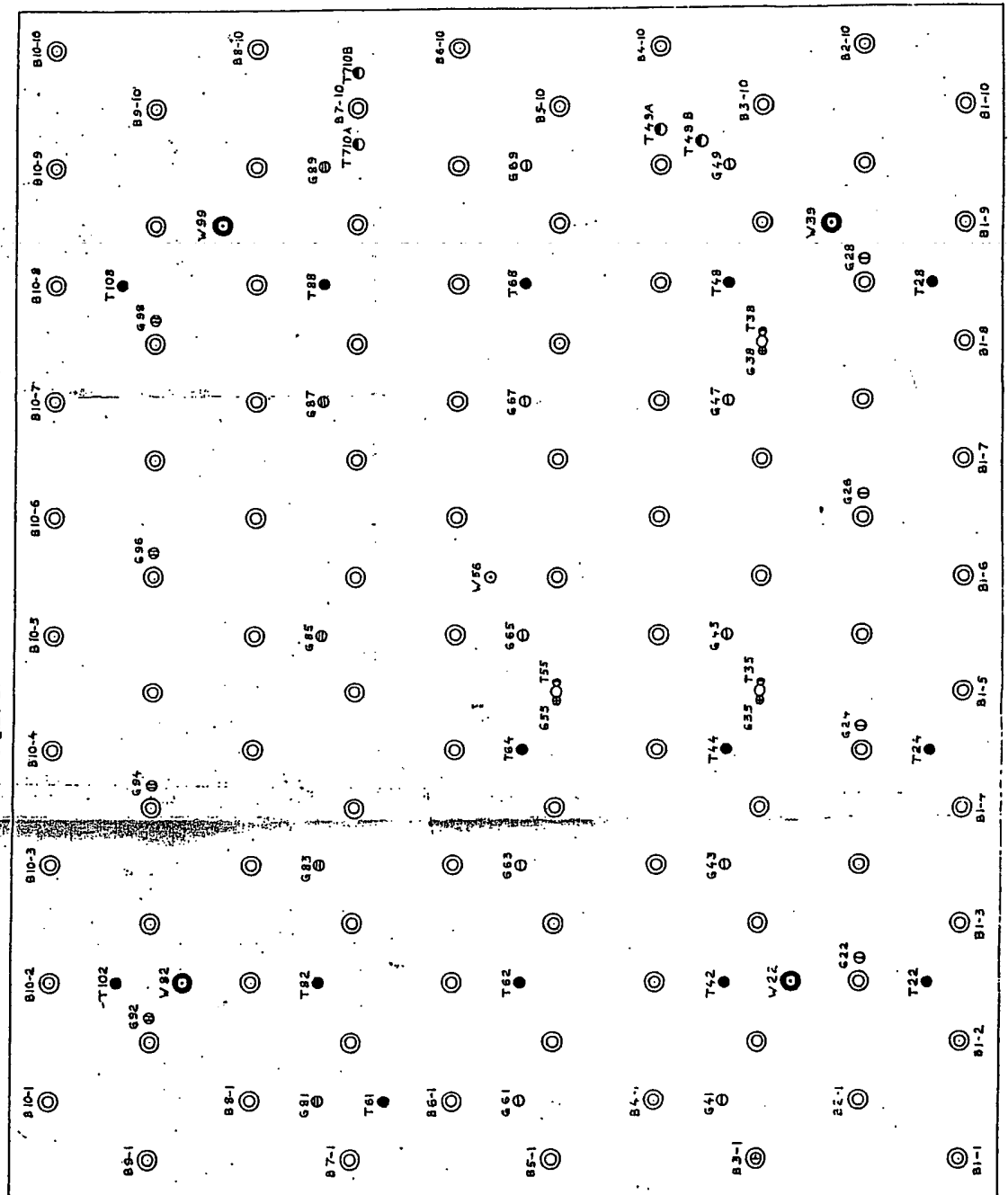
Figure 23
ORIGINAL TAR CONTENT BETWEEN 45 TO 55 FIRST
(lb/ cu ft)

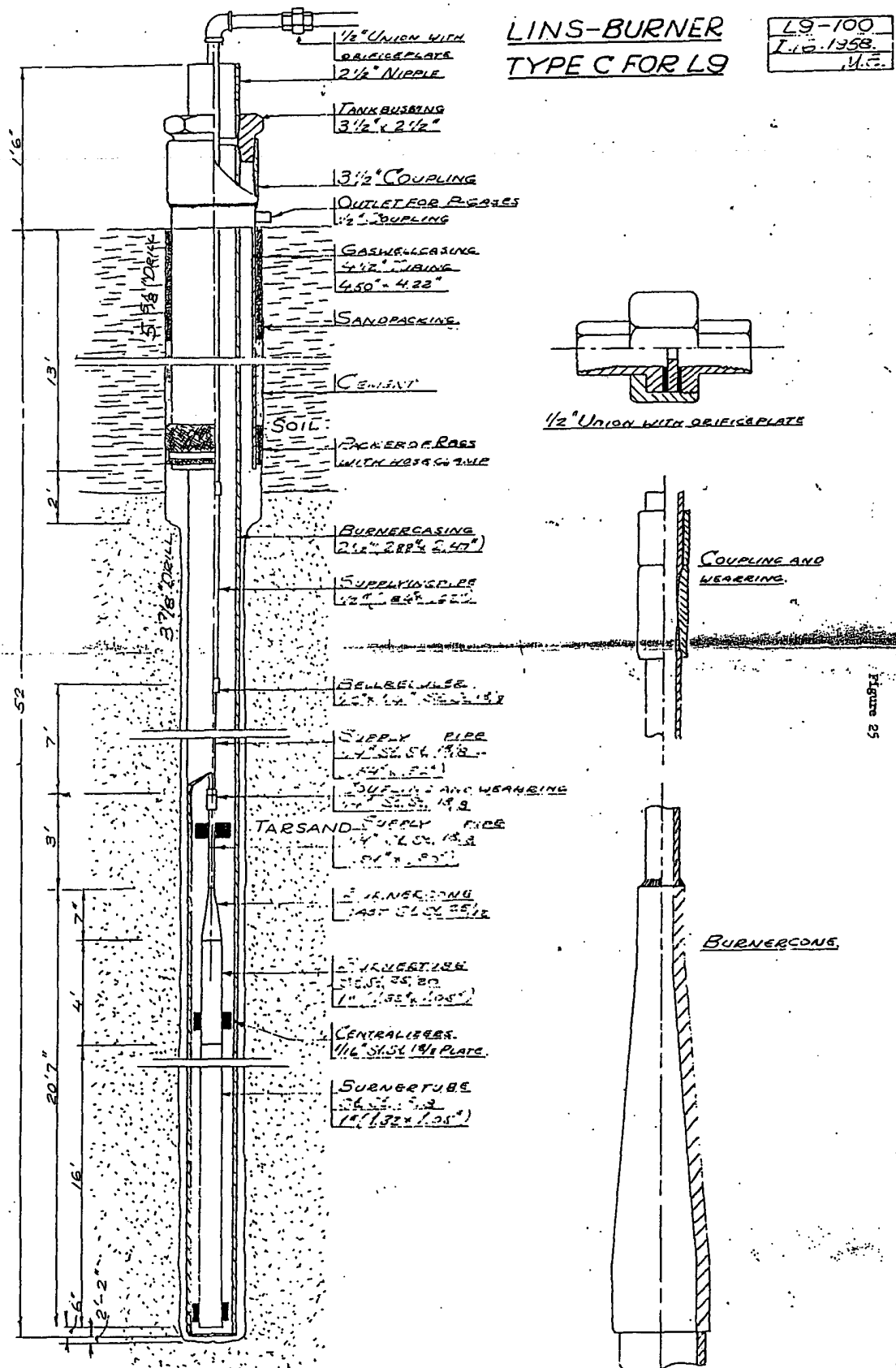


TEMPERATURE WELL 5.9' FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.
IN BURNER HOLE. 52.1" CASING.
3. (T49B 4') FROM ADJACENT BURNER. 55.3% HOLE. 52.2" CASING.

7-9-10	JAN. 21, 1958, B.P.	REVISED 3.15.58, AP
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Figure 24

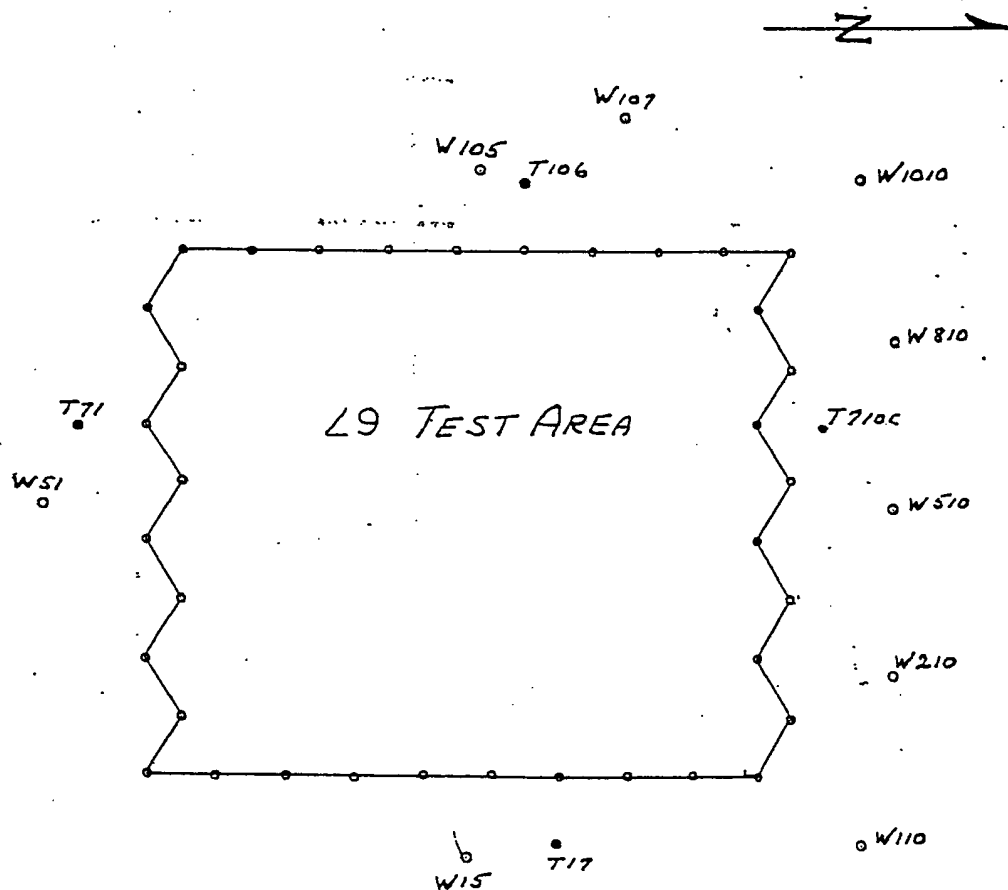




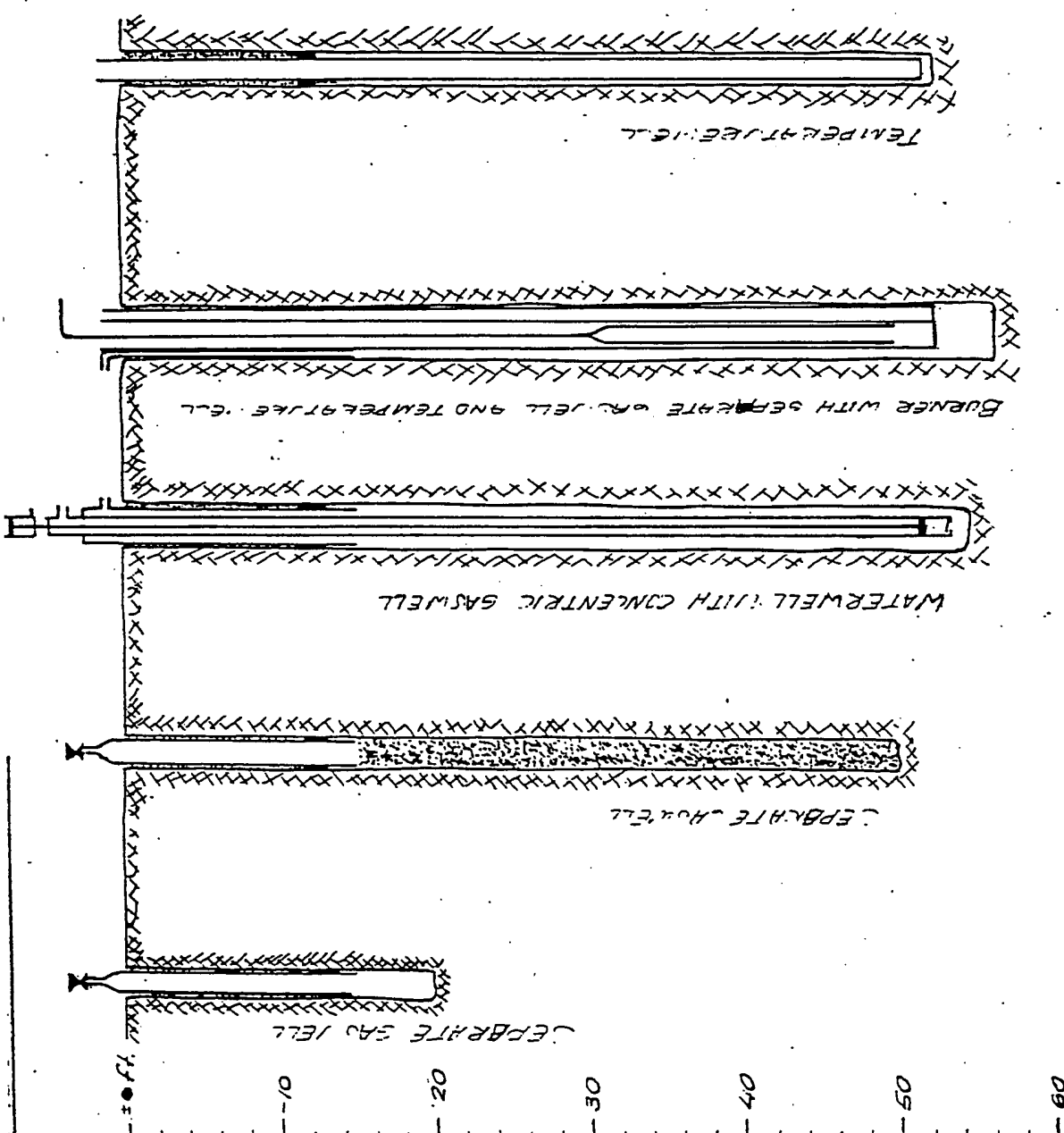
L9-105
5.26.59.BP

Figure 27

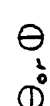
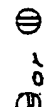
WATER WELLS AND TEMPERATURE WELLS OUTSIDE L9.



<u>Well, No.</u>	<u>Location</u>
W15,105	12 feet outside the edge of the field.
W51,105,110,210	15 " " " " " " "
W510,810,1010	15 " " " " " " "
W107	20 " " " " " " "
T17	10 " " B1-7.
T71	10 " " B7-1.
T710C	10 " " B7-10
T106	10 " " B10-6



SYMBOLS FROM
DRAWING 29-101.

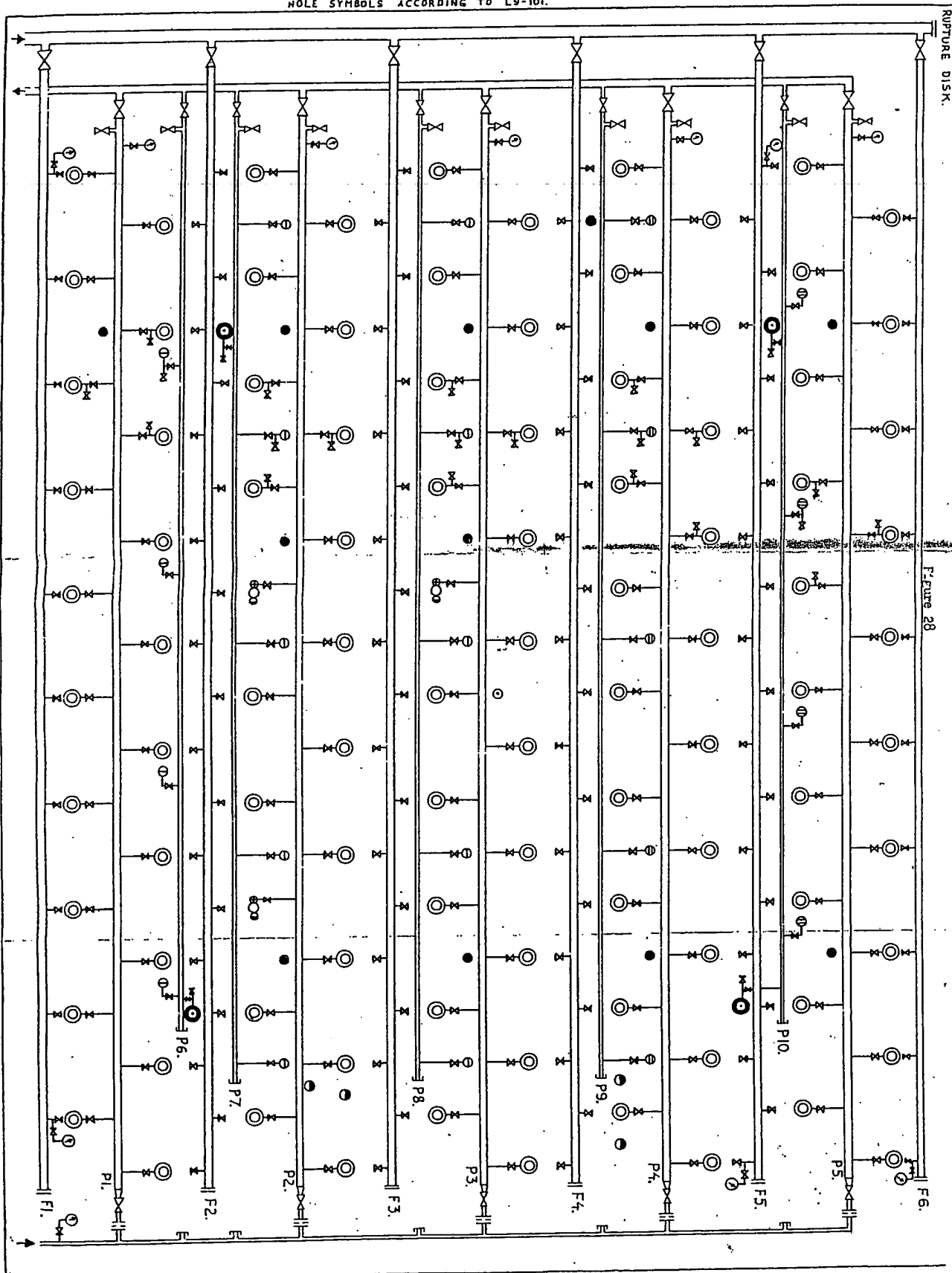


F-, P- AND R-LINES OF TEST L9.

F-LINE, 3" P-LINE, 1"
 F-LINE, 2" R-LINE, 1"
 P-LINE, 2" 1/2" PIPE.

HOLE SYMBOLS ACCORDING TO L9-101.

L 9-102
 JAN. 24, 1958. 8P



1X 15 / 958 ③

To L9

FUEL STATION FOR L9

Figure 29

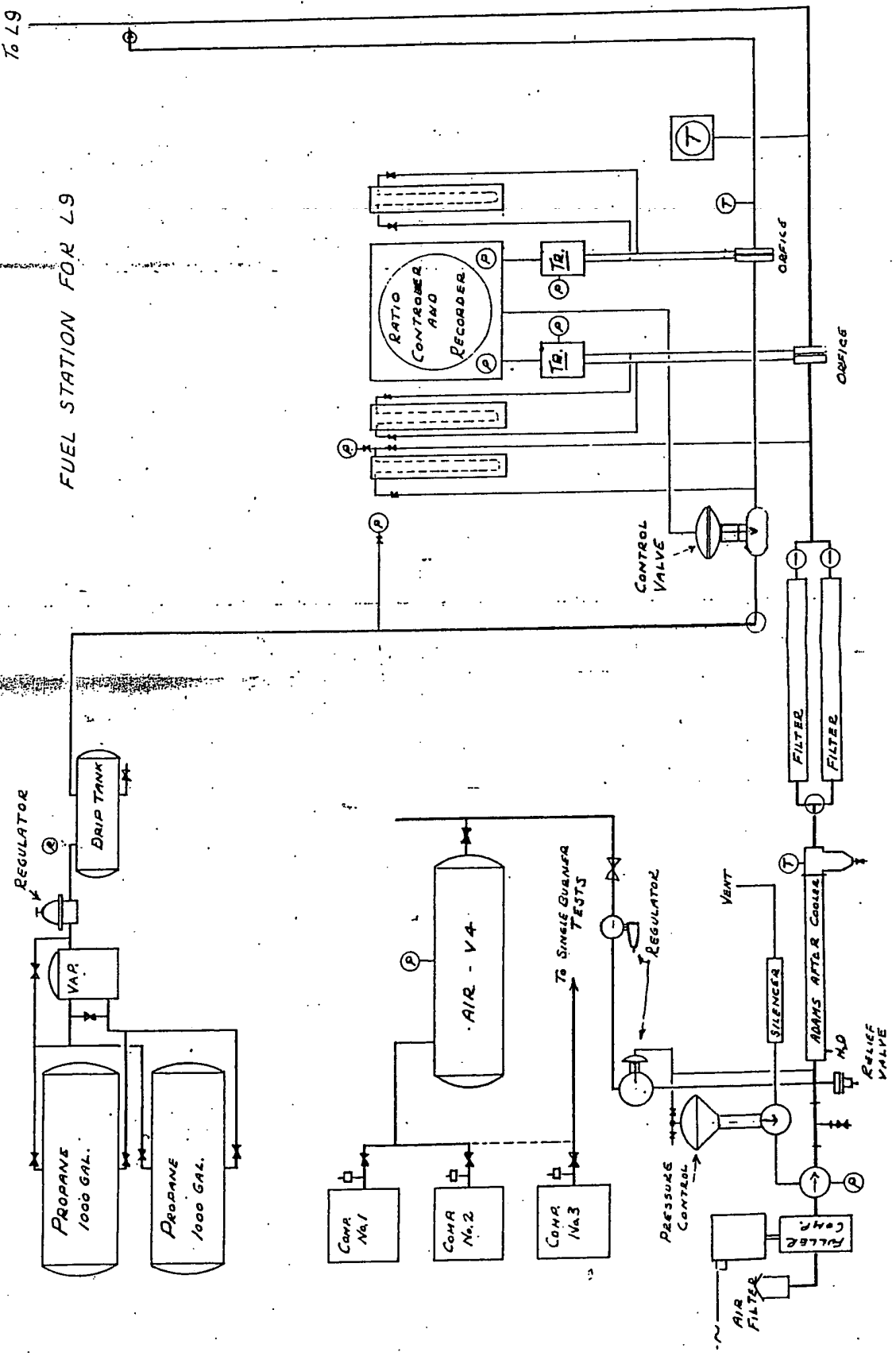
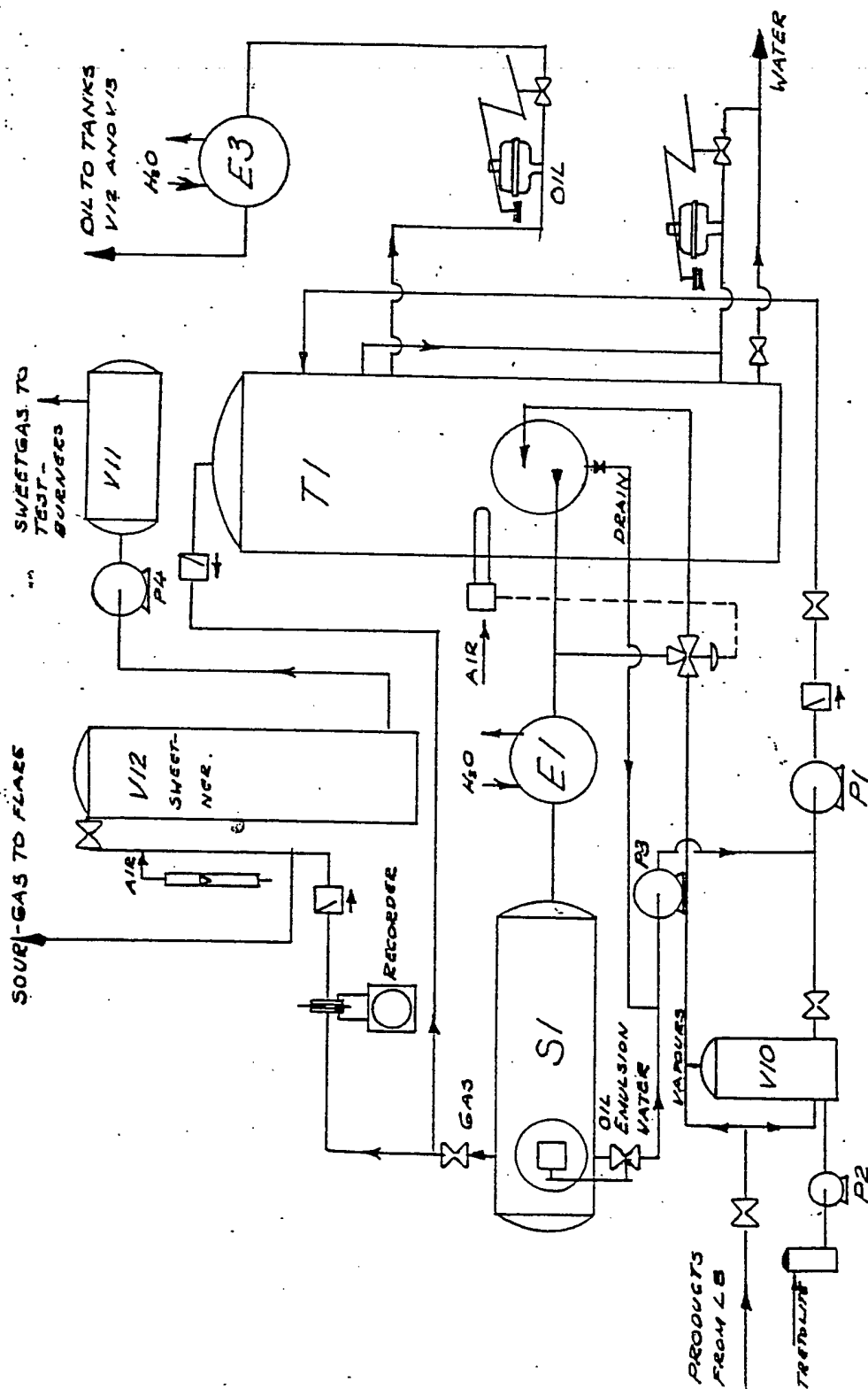


Figure 30

PRODUCT STATION
FOR L8A

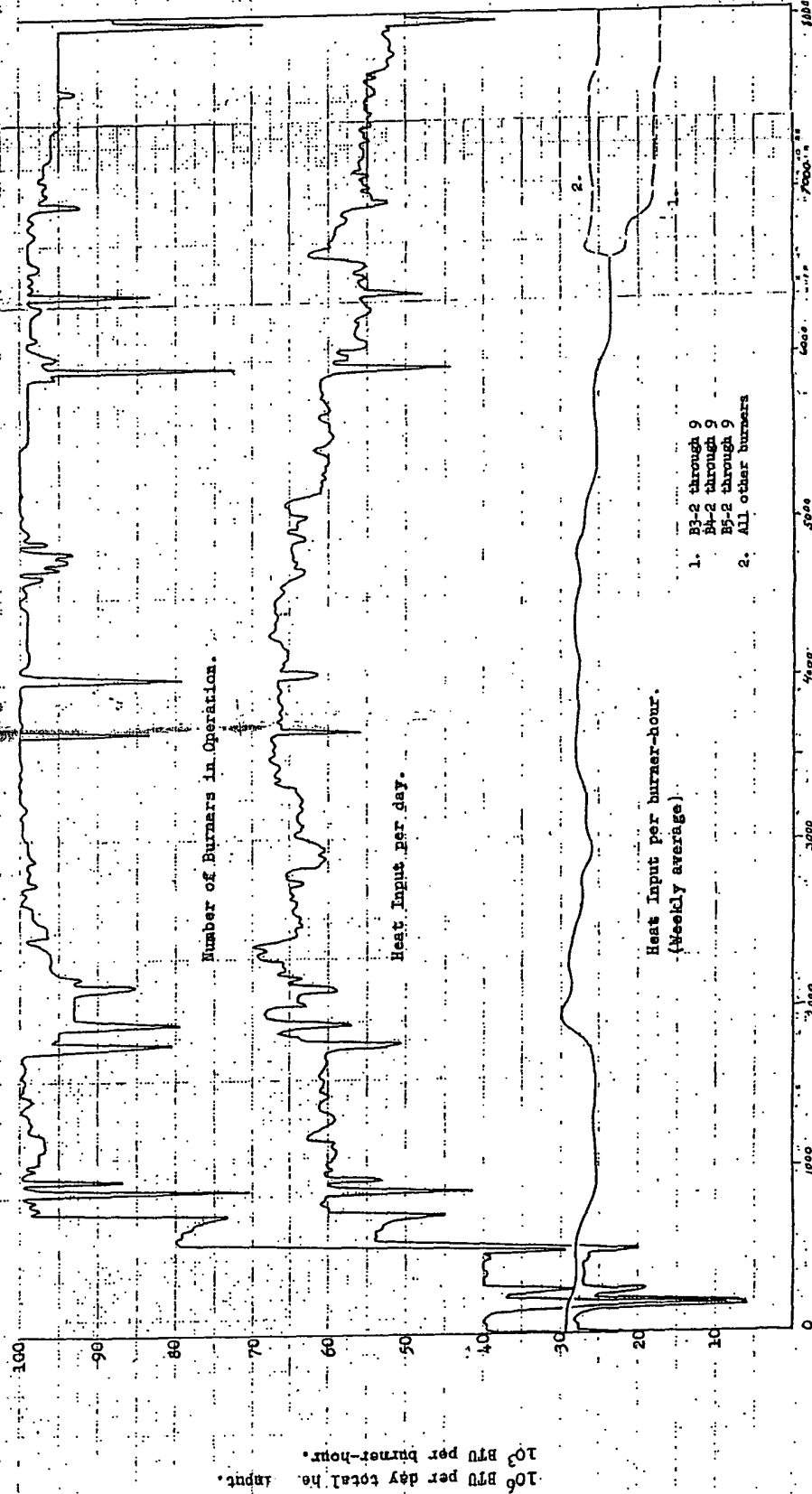
L8 - 110
10-16-1957



19-316.
3-25-59, BP

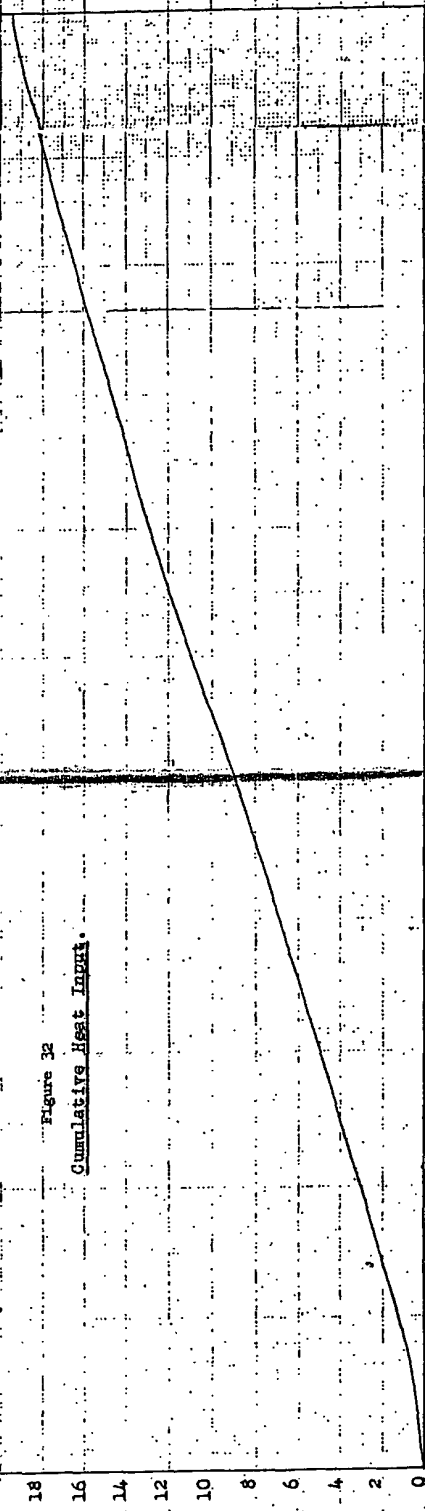
Figure 31

L9 HEAT INPUT DATA



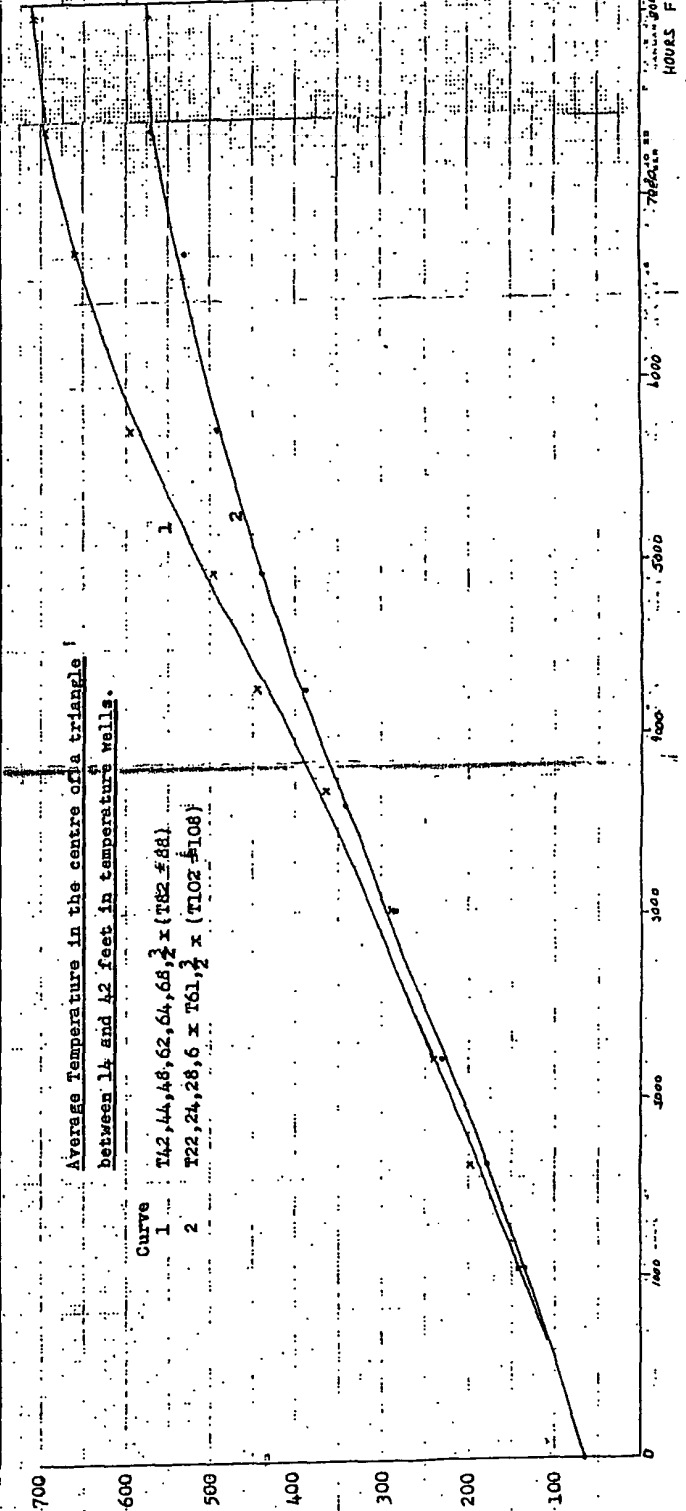
19-437
3.63.59

Figure 32
Cumulative Heat Input.



Average Temperature in the centre of a triangle
between 14 and 42 feet in temperature walls.

- Curve
- 1 $T_{42} 44, 48, 62, 64, 68, \frac{3}{2} \times (T_{82} \pm 42)$
 - 2 $T_{22} 24, 28, 6 \times T_{61}, \frac{3}{2} \times (T_{102} \pm 108)$



19-115
110-115 BP.

Figure 33
Sand loss in 19 Burners.

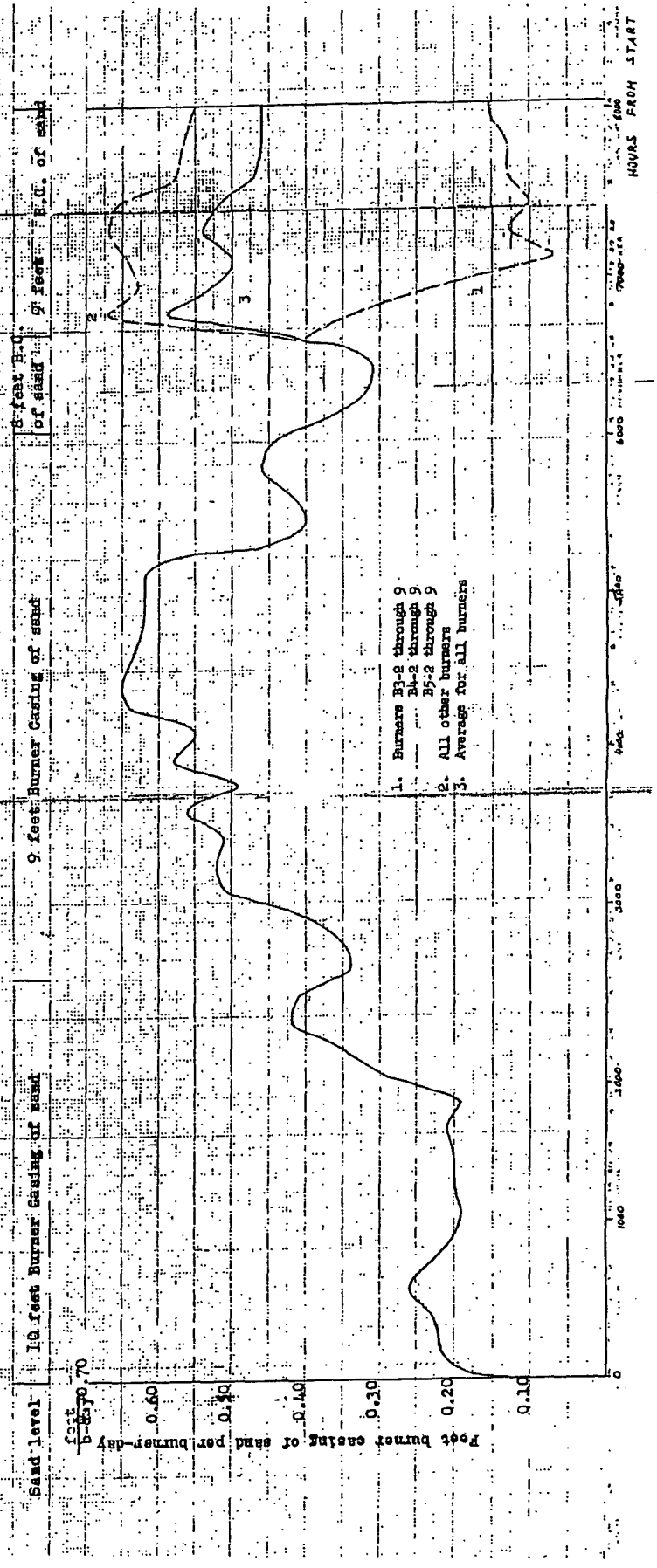


Figure 34

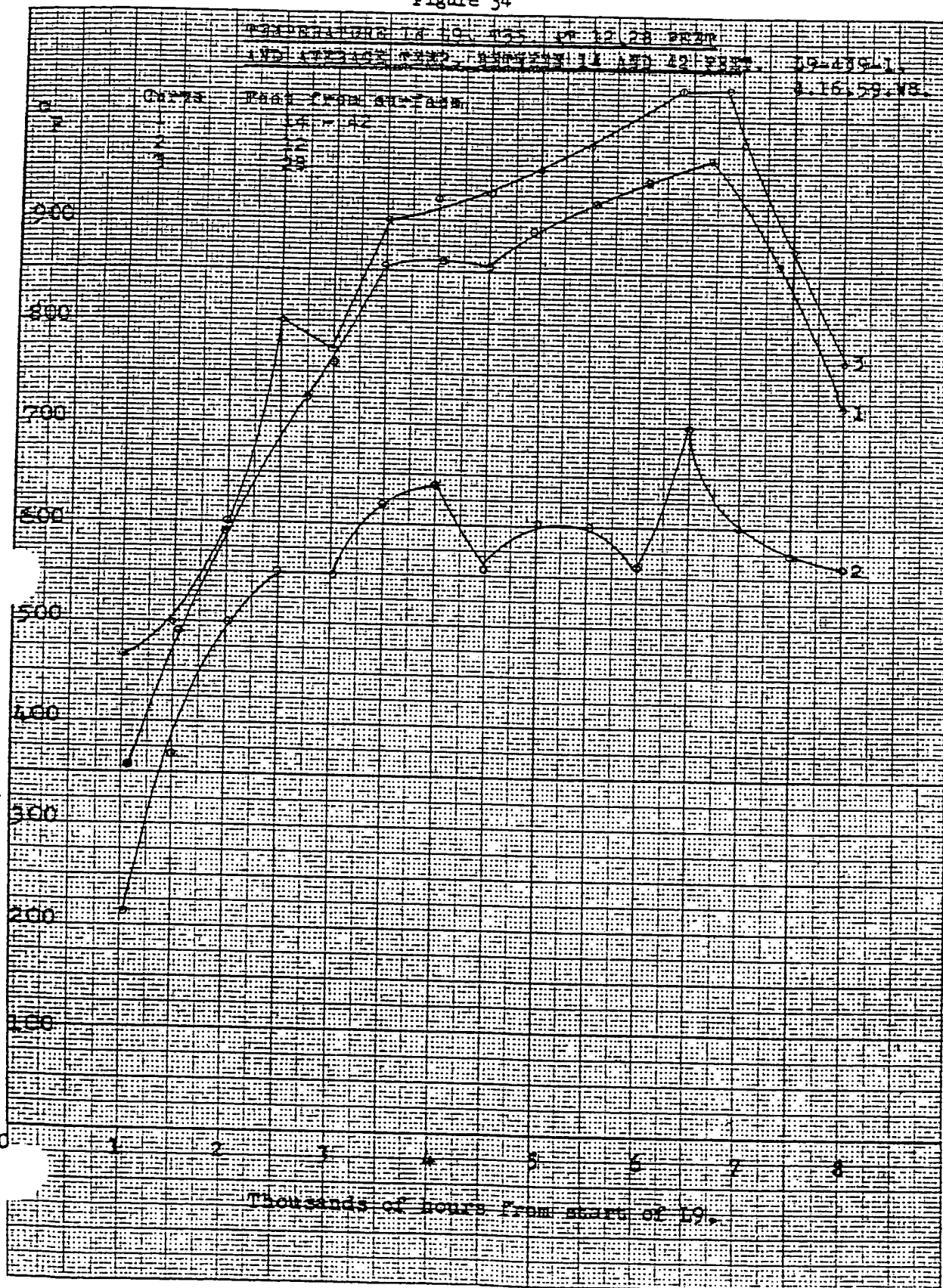


Figure 35

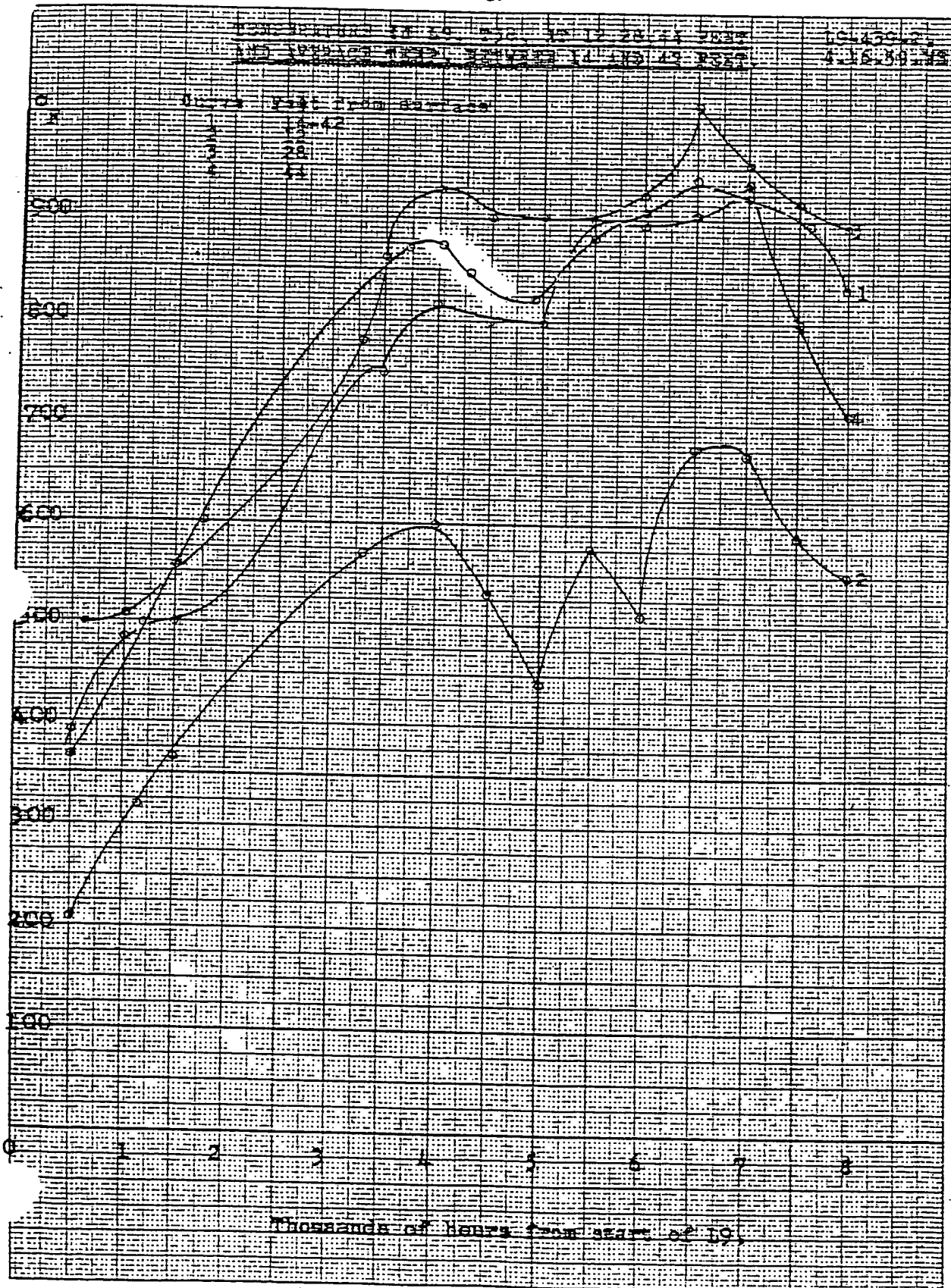


Figure 36

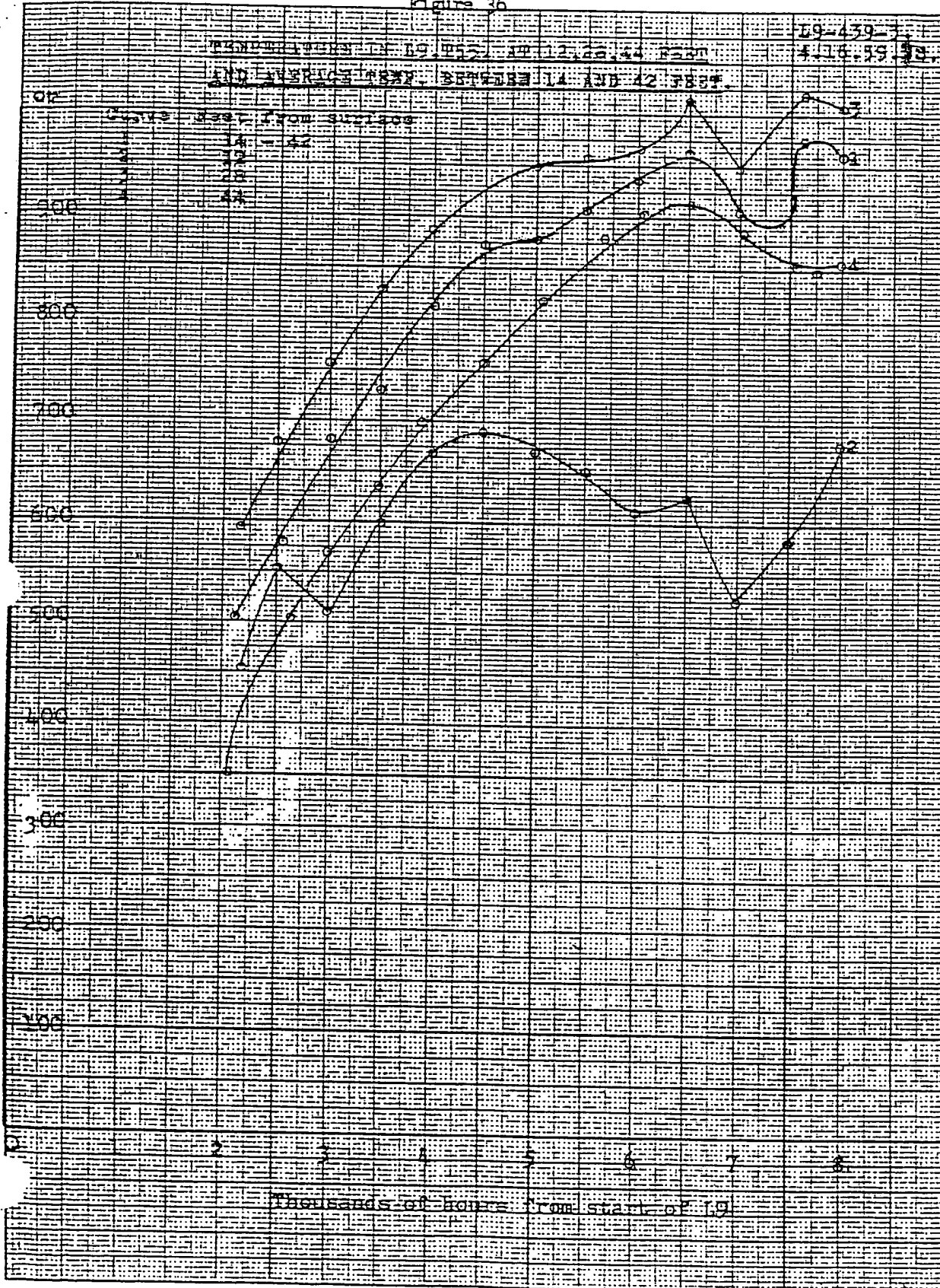


Figure 37

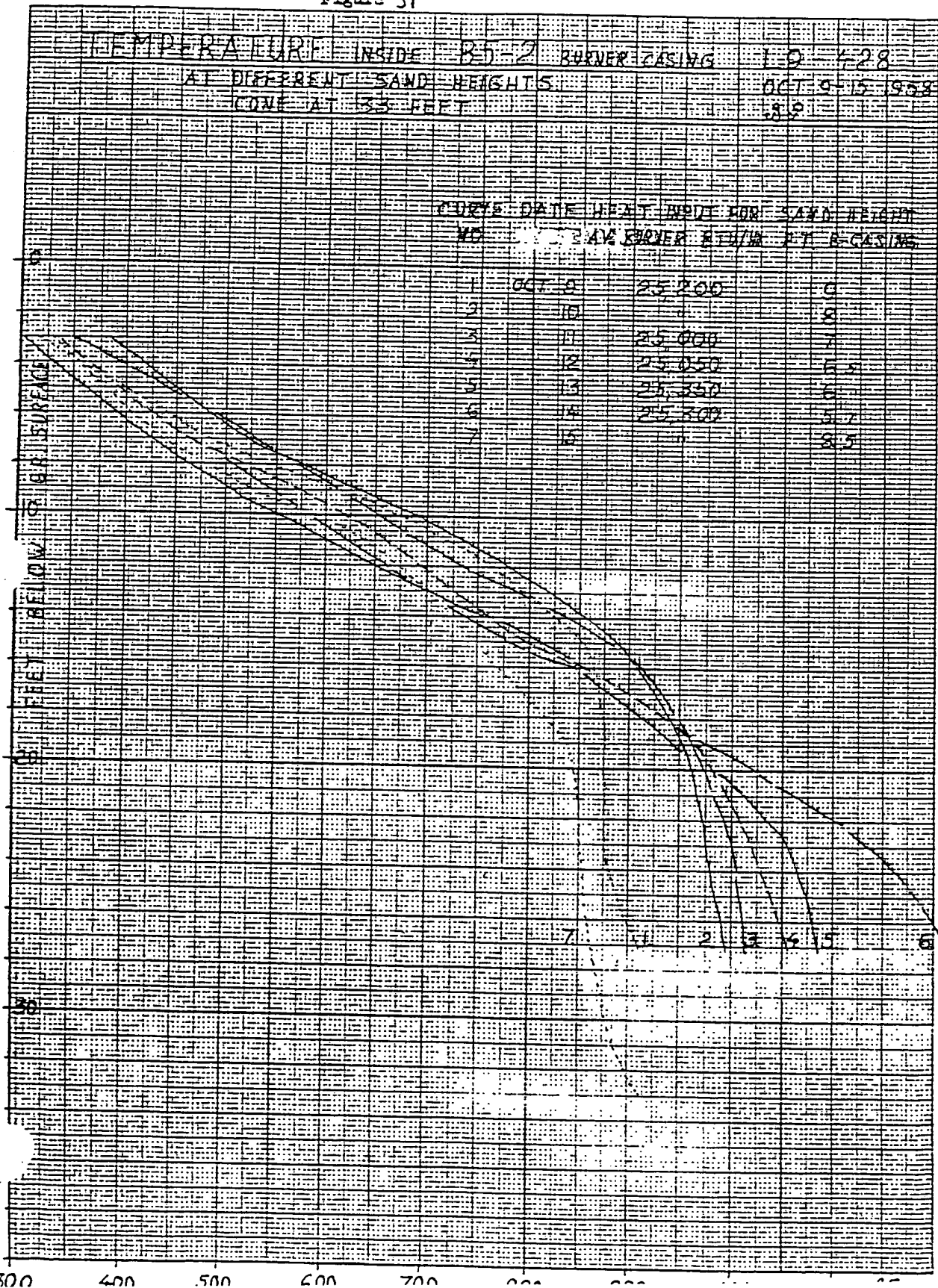


Figure 38

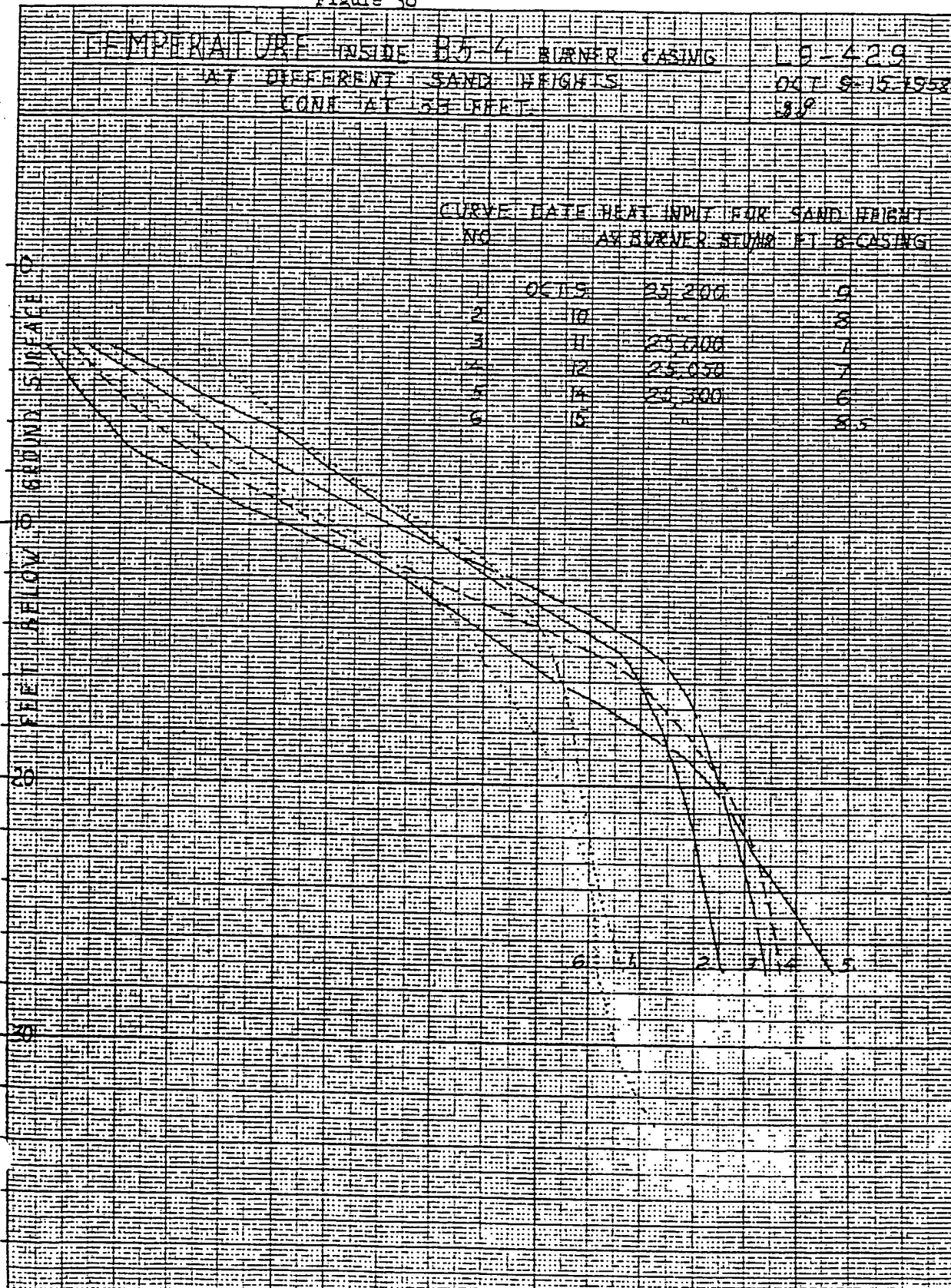


Figure 39

TEMPERATURE OUTSIDE (73°F) AND INSIDE
BURNER CASING 31-5. 12-541-1
4-27-59, 73.

Curve	Burner casing	Hours after start
1	Outside	4090
2	"	6410
3	"	7580
4	Inside	4130
5	"	6430
6	"	7370
7	Outside	2400 hours from start down.

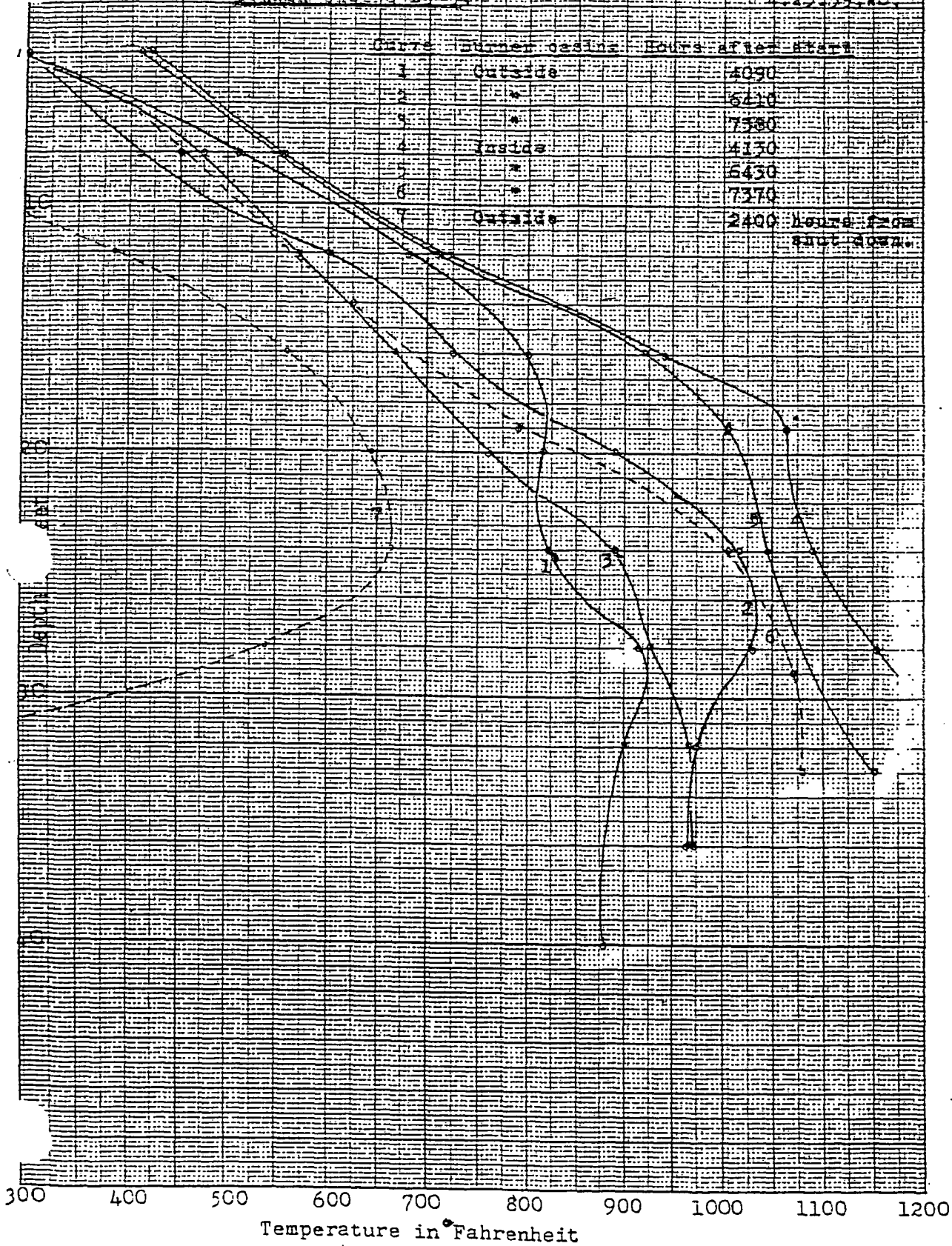


Figure 40

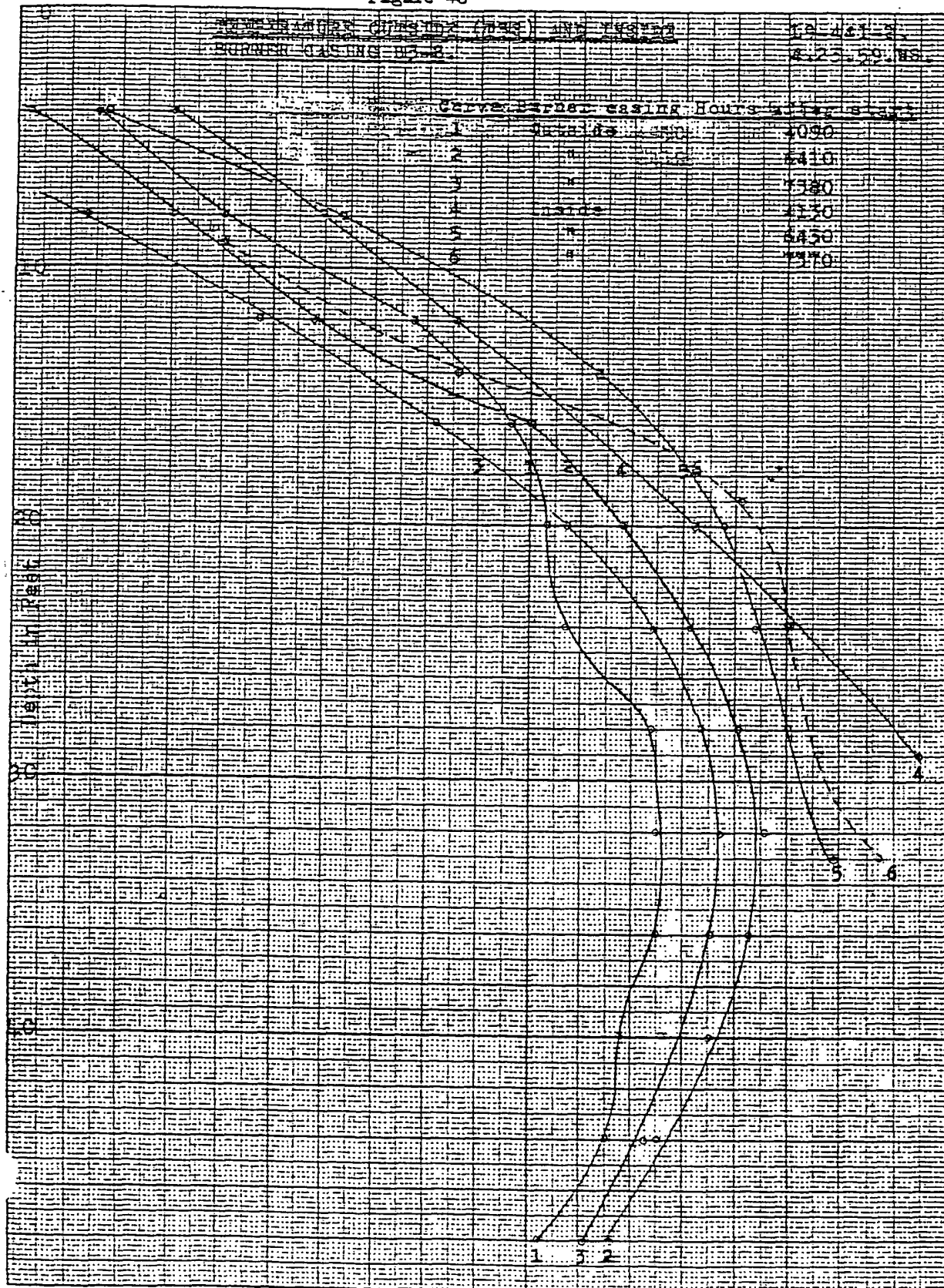


Figure 41

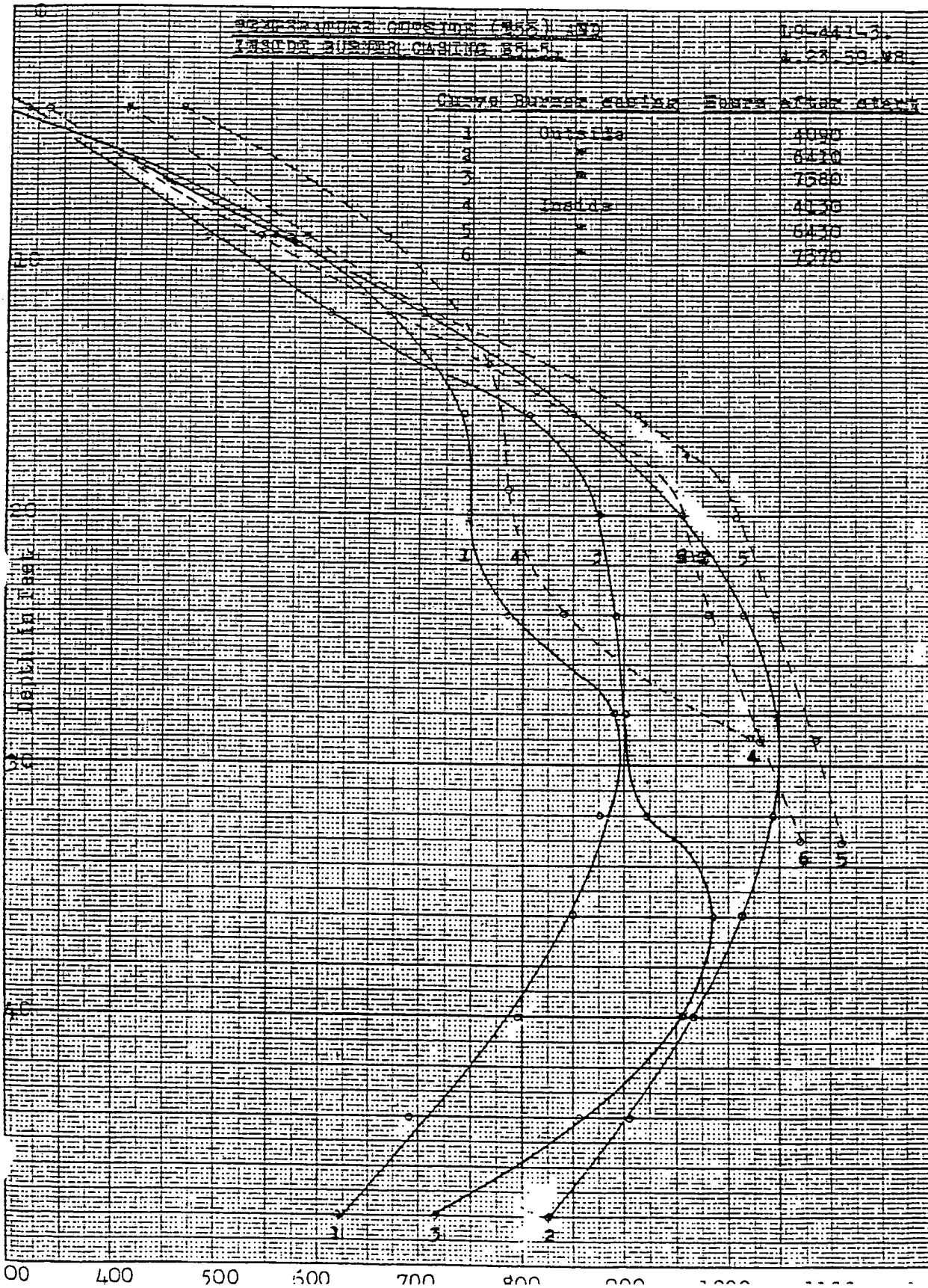


Figure 42

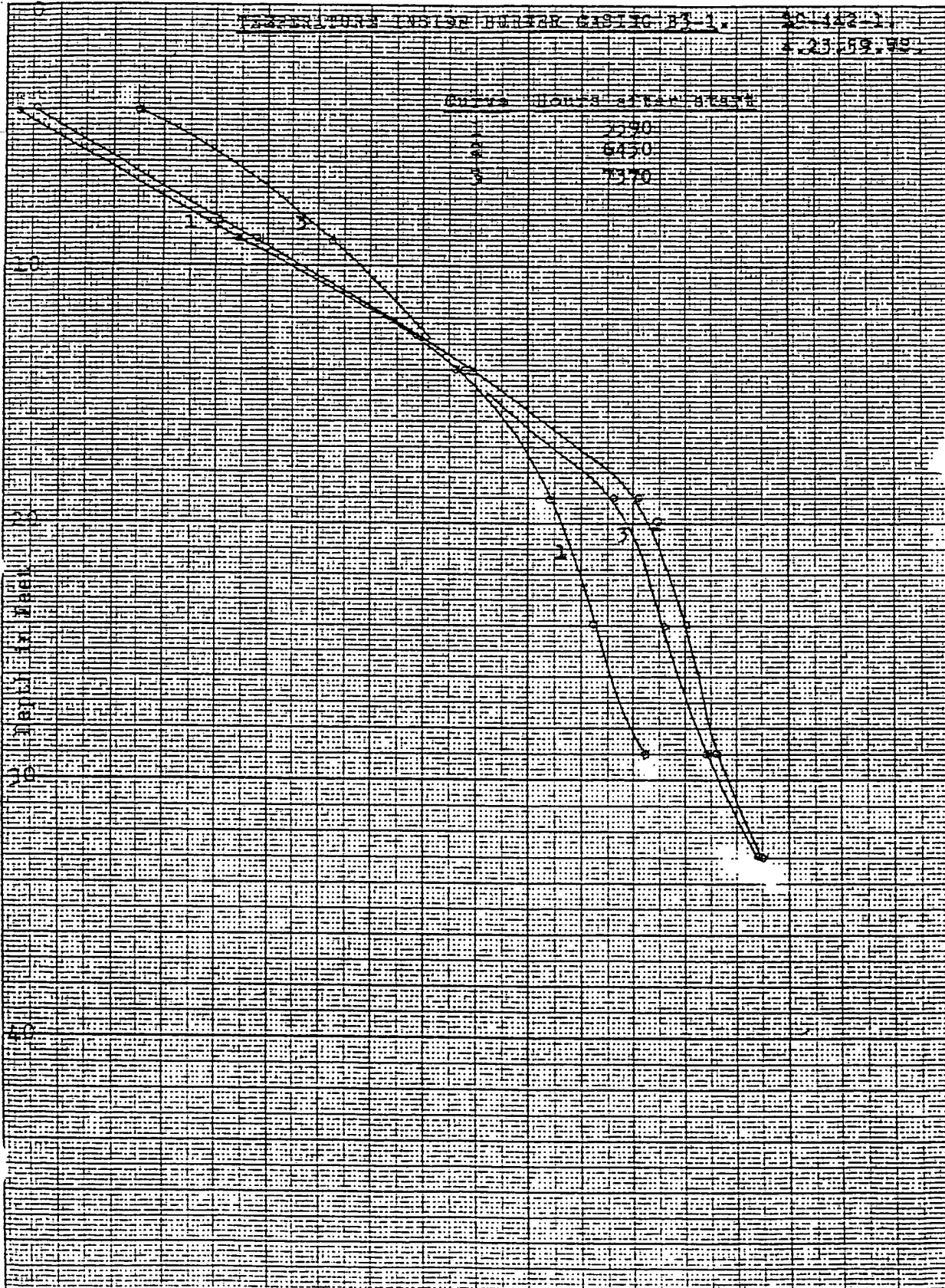


Figure 43

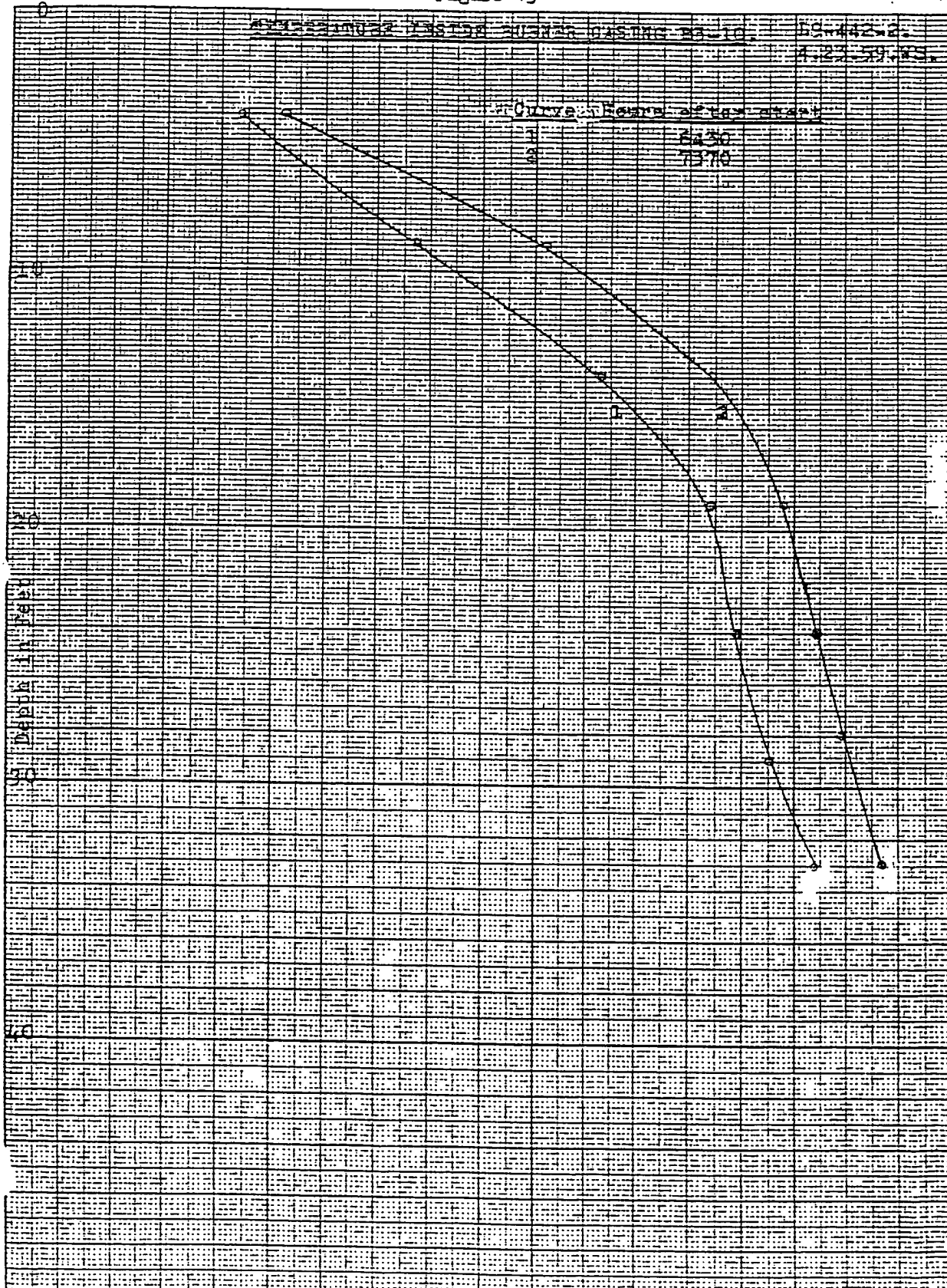


Figure 44

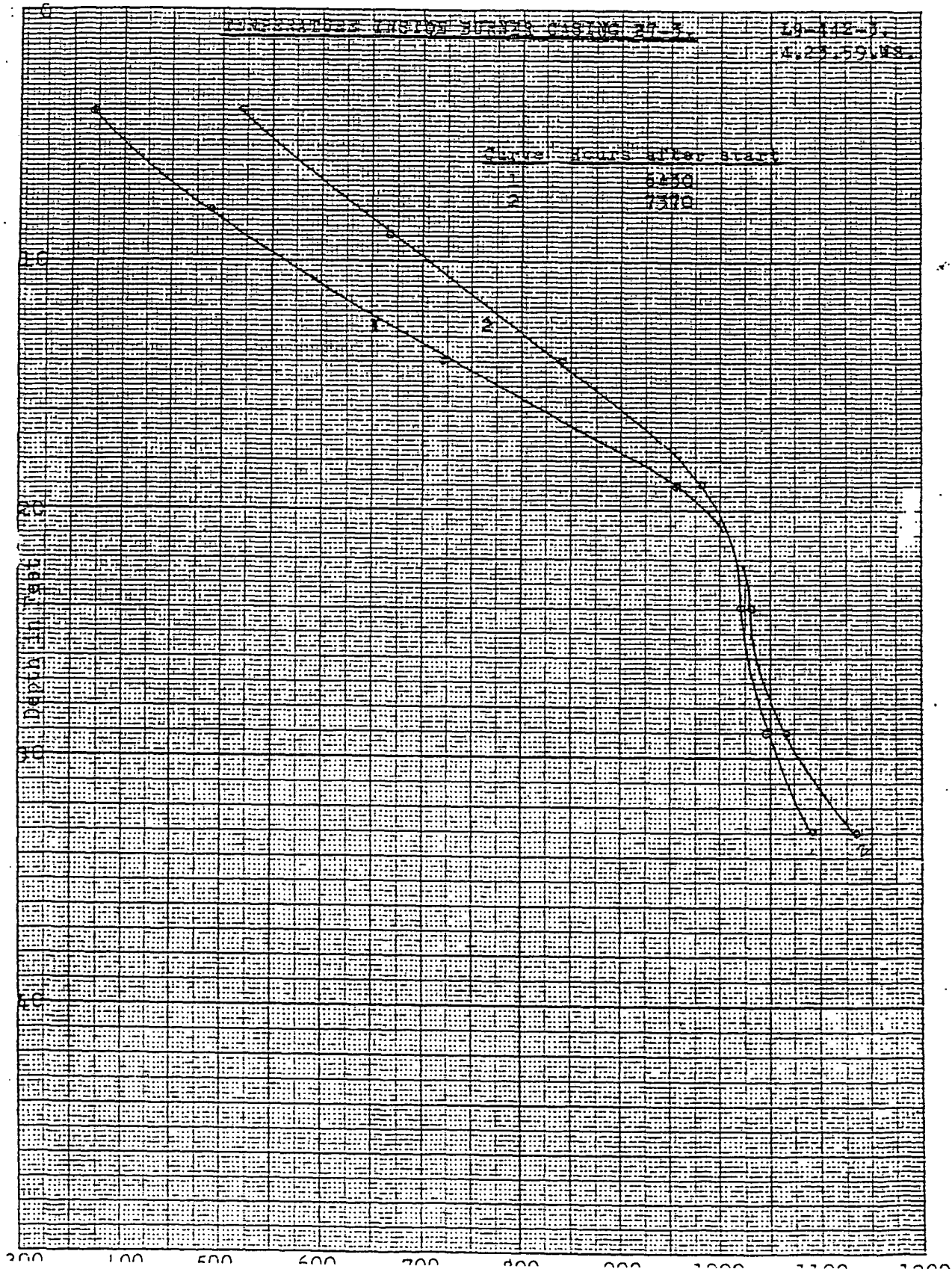


Figure 15

RECAPITULATING TANKS BARRED CASINO ST. L.

10-412-4.

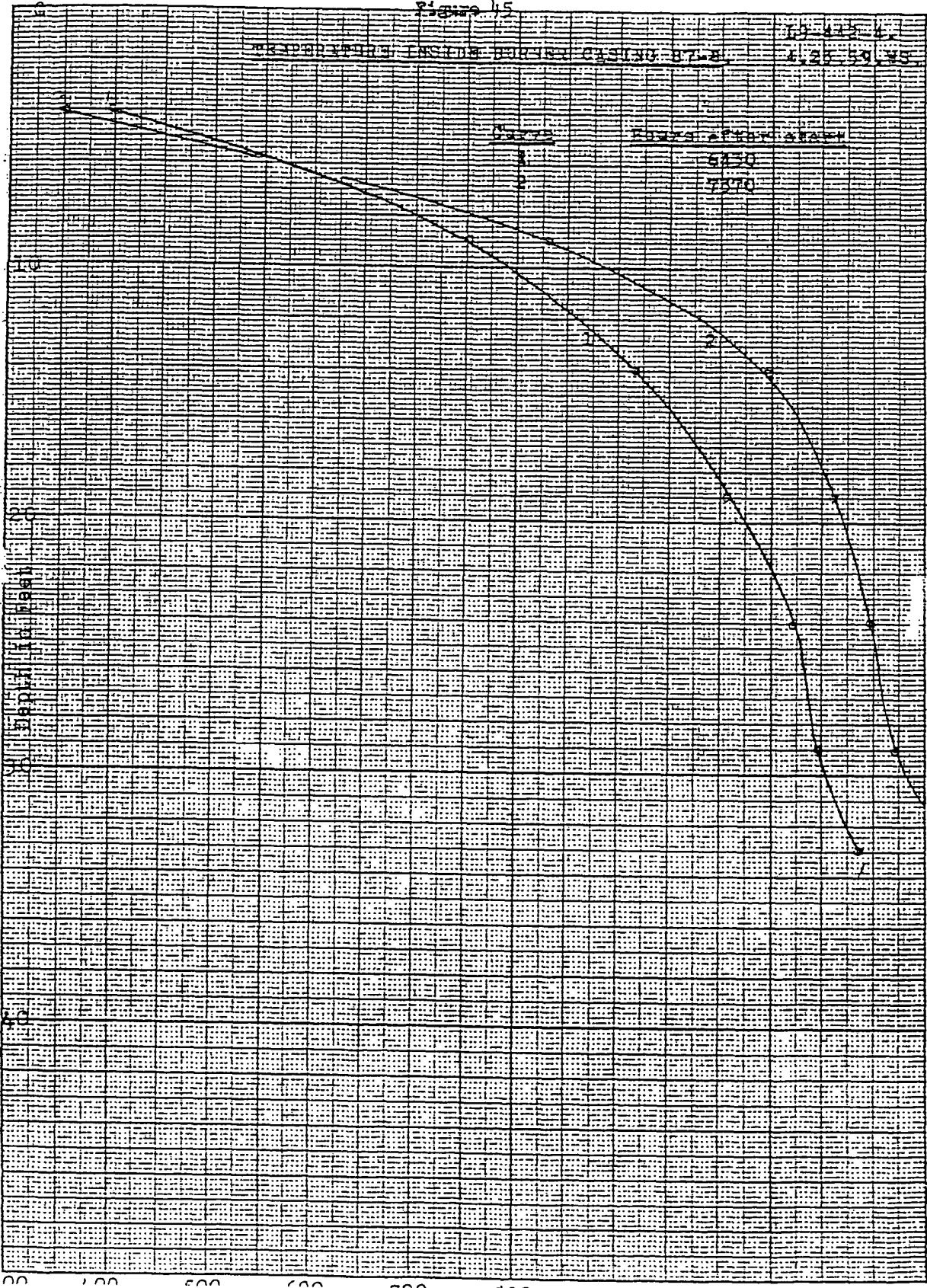
4.26.59.45.

Curve

Curve

5430

7370



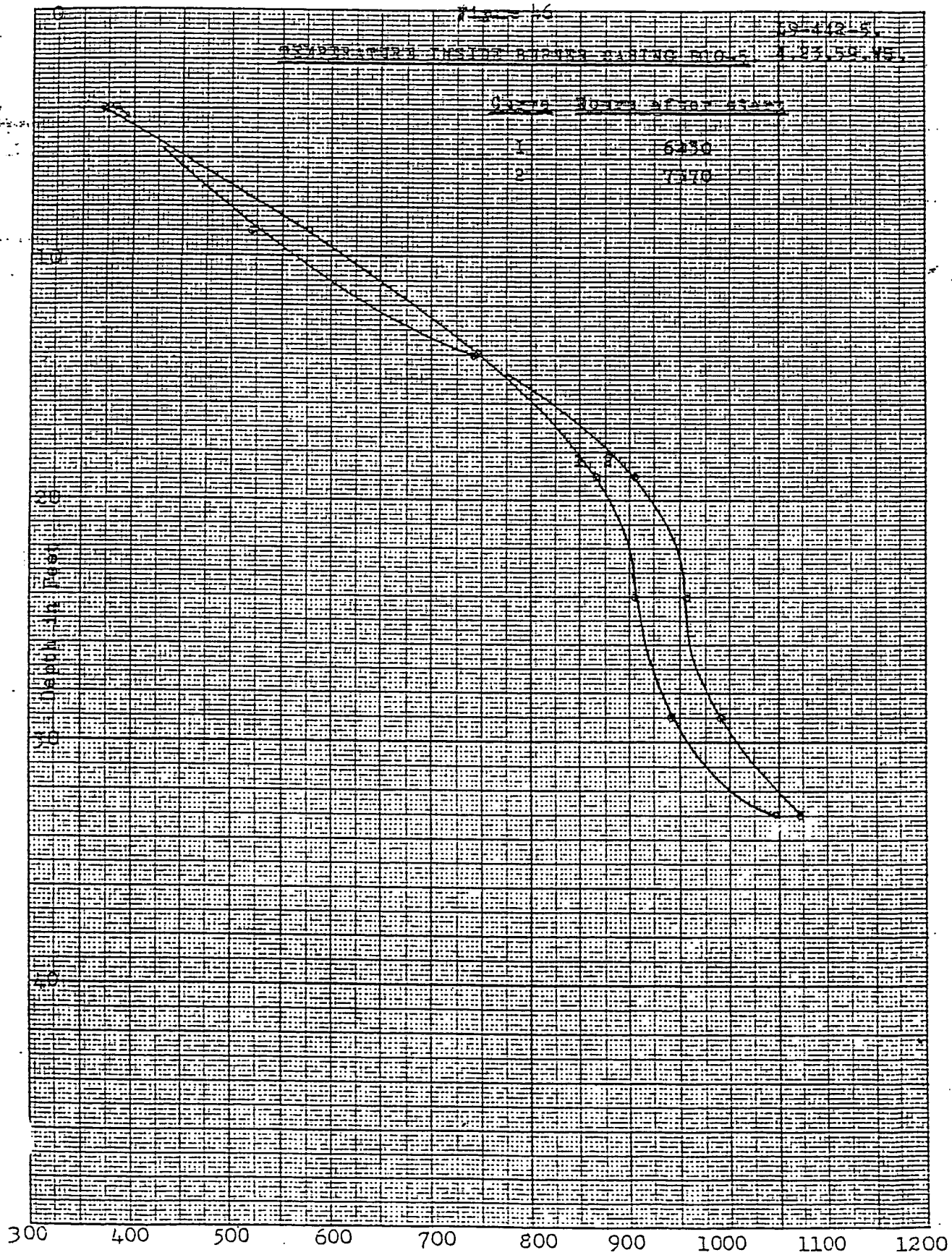


Figure 47

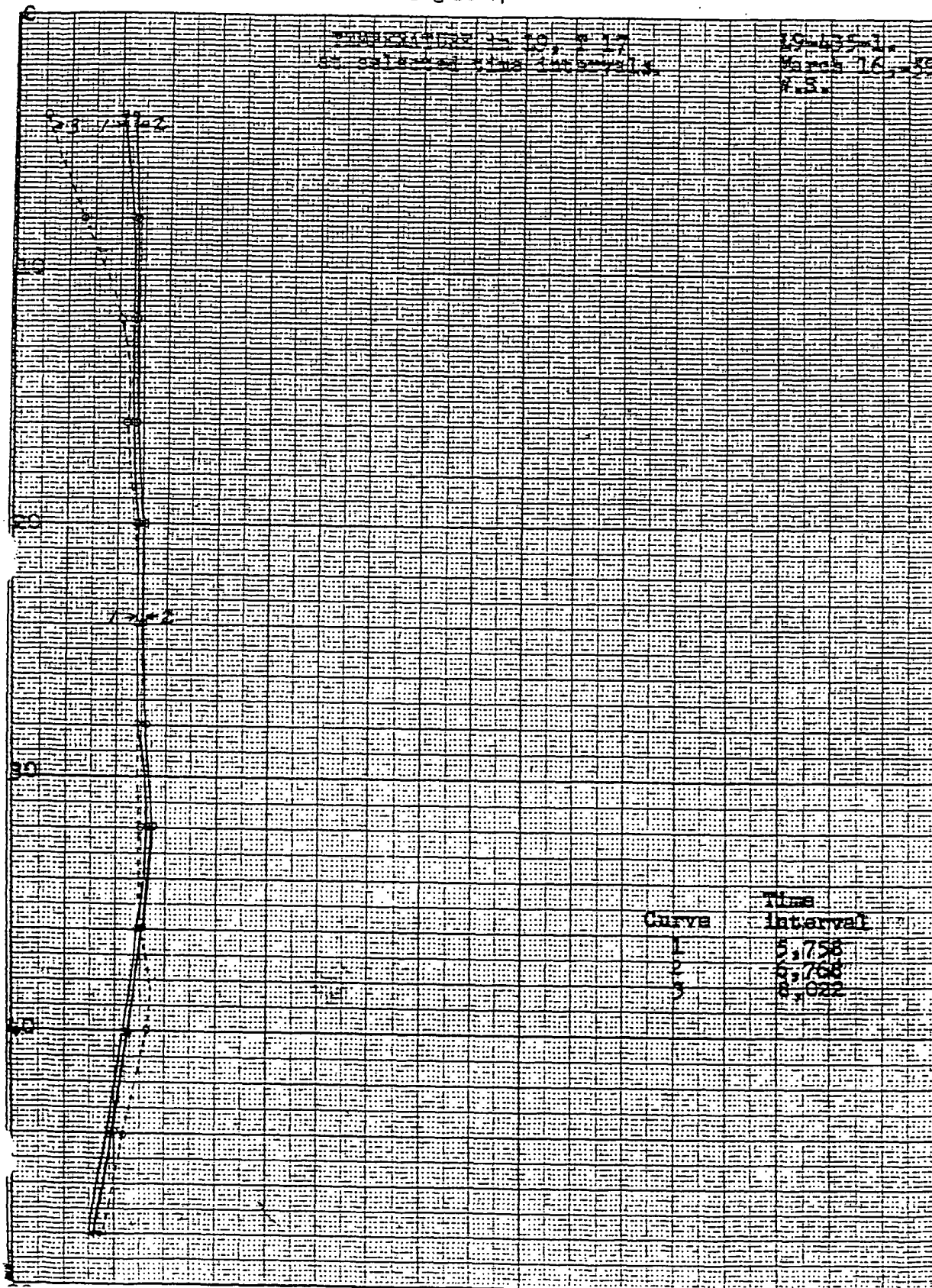


Figure 48

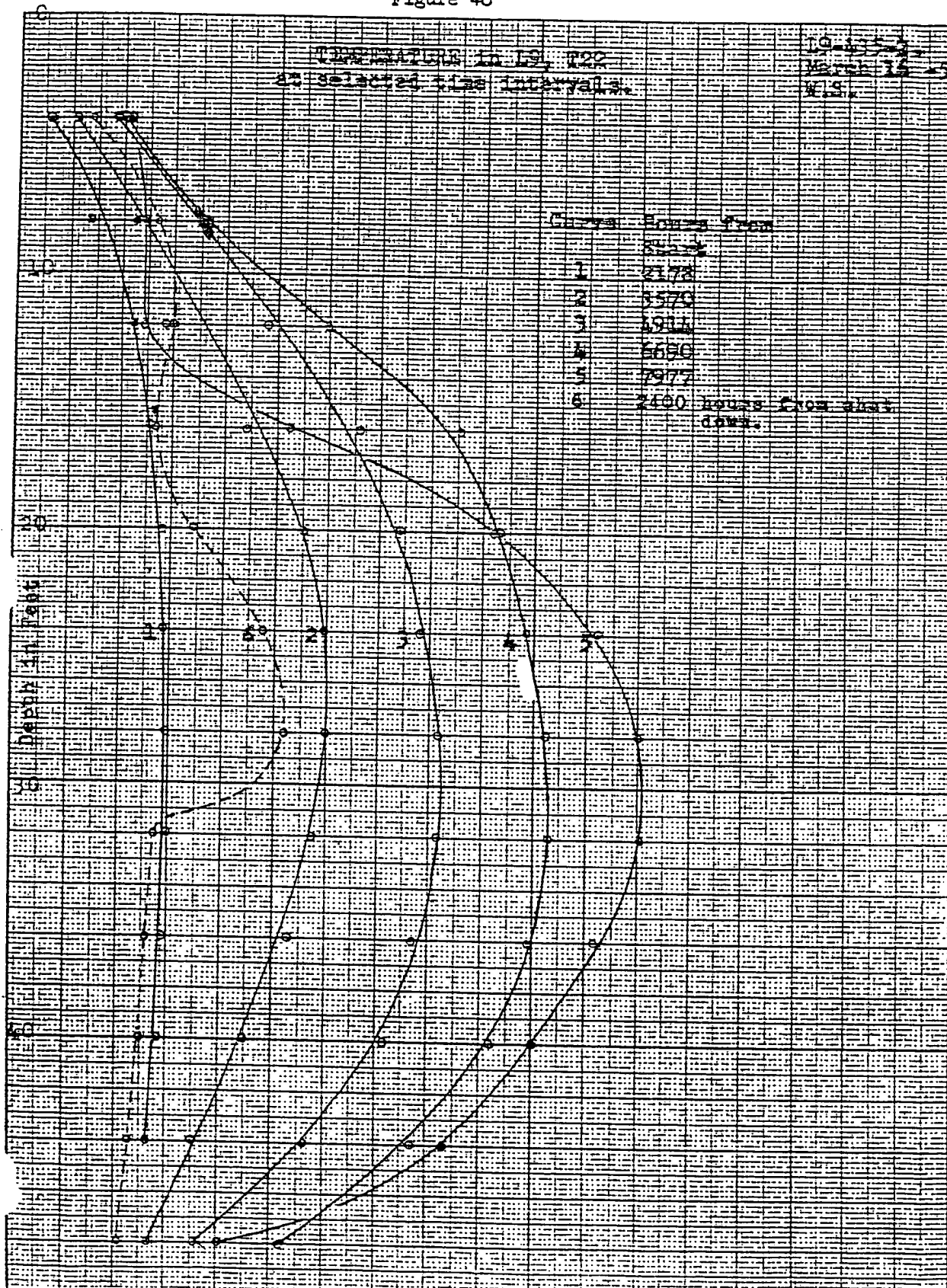


Figure 10

TEMPERATURES in IG, 325
at selected time intervals.

IG-435-3
March 14, 1955
U.S.

Curve	Hours From
	Start
1	2378
2	3570
3	4914
4	6650
5	7977
6	2400 hours from about down.

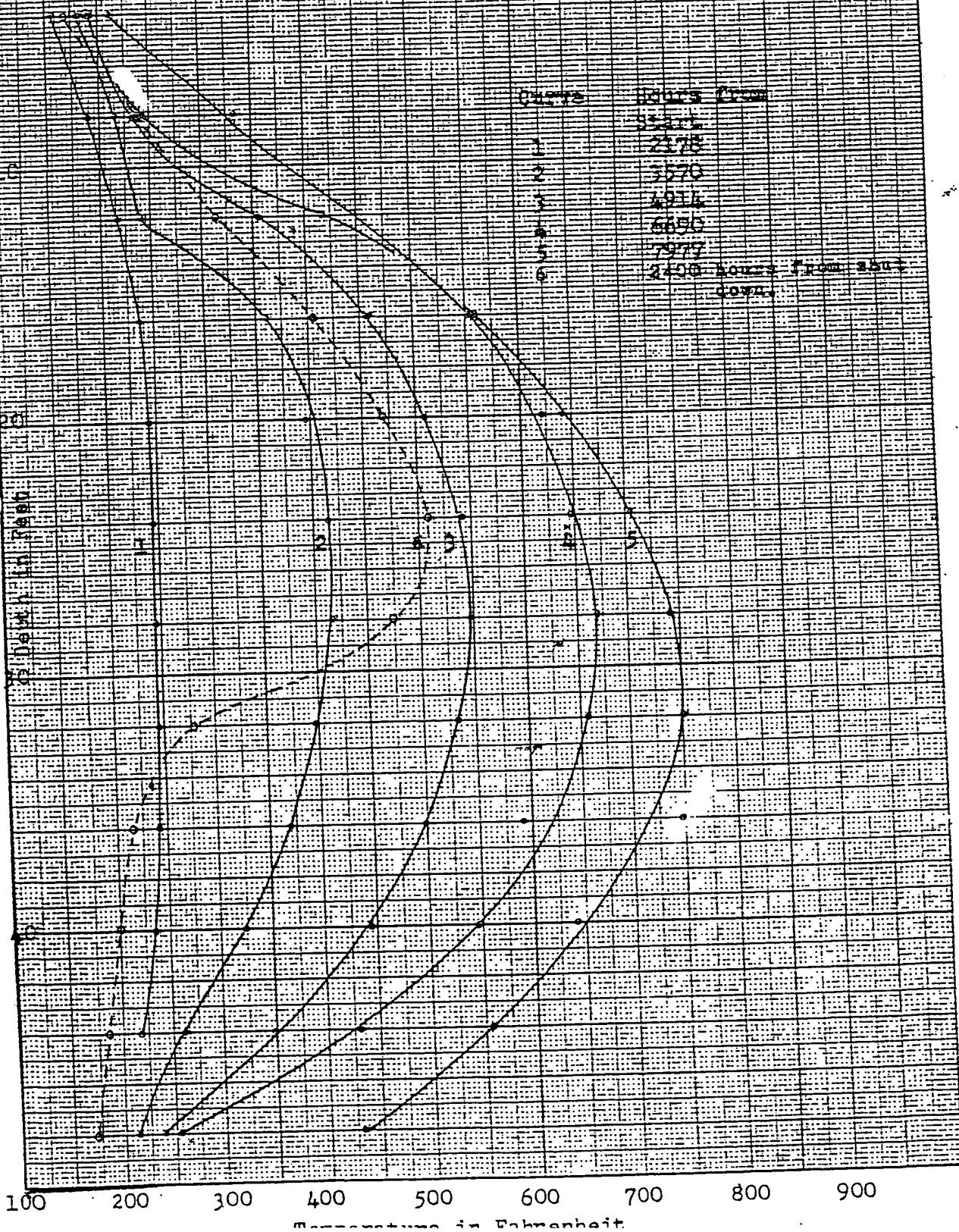


Figure 50

Temperature vs. time
at selected time intervals.

10-11-54
March 18, 55
W.S.

Time	Hours from Start
1	2173
2	3376
3	4914
4	6699
5	7977

Hours from
Start down

760
2400 hours from start
down.

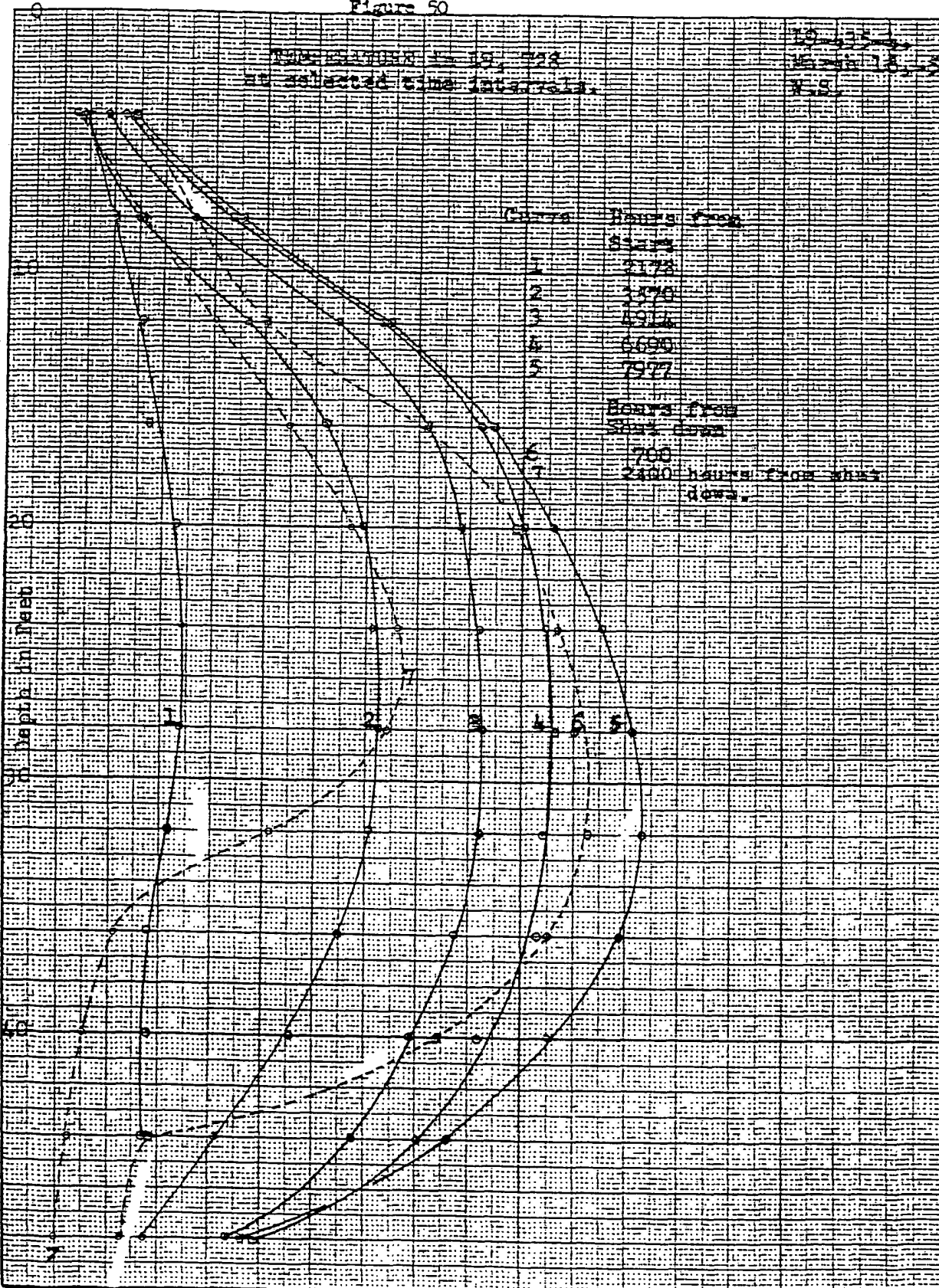


Figure 57
TEMPERATURE IN 10' SL
at selected time intervals

Station
Date 10-10-58
U.S.

Curve

Start from

2178

1818

1911

6596

7977

2400 HOURS FROM START
DOWN

TEMPERATURE

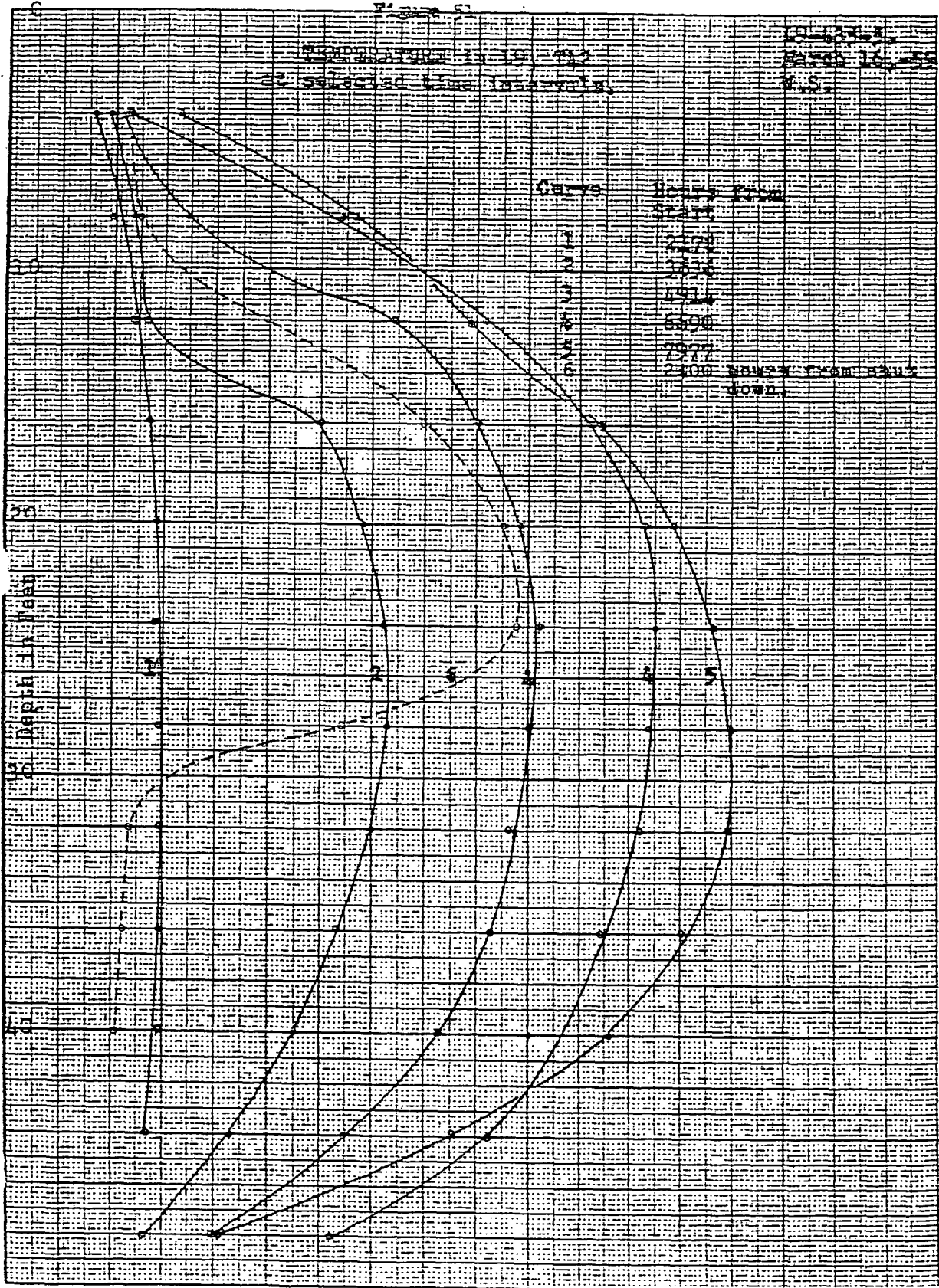


Figure 52

TEMPERATURE in $^{\circ}\text{C}$, $^{\circ}\text{F}$ &
at selected time intervals

IS-35-6
March 14, 50
W.B.

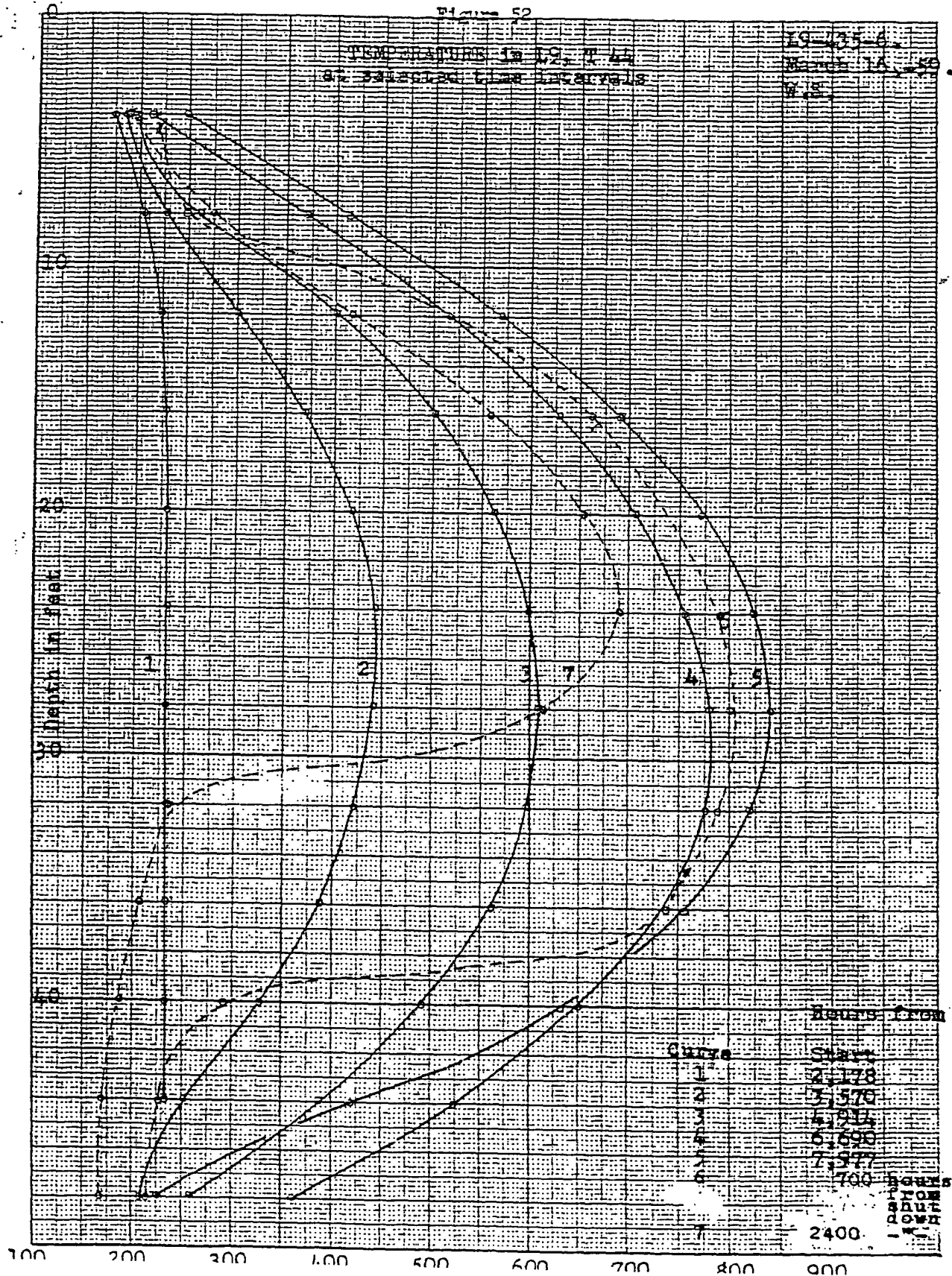
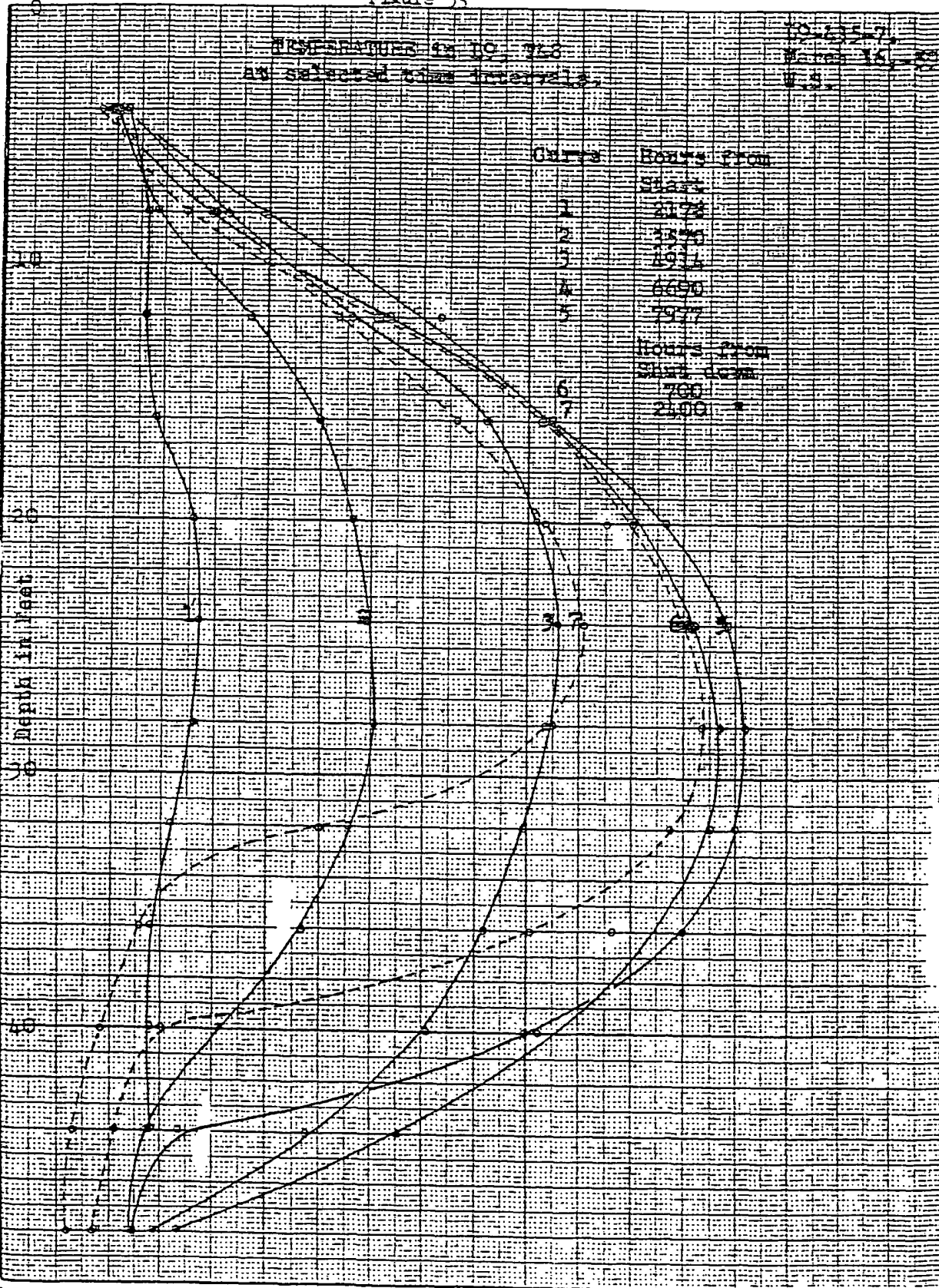


Figure 53

TEMPERATURE IN °C, 74.8
 AT selected time intervals.

10-15-71
 11-15-71
 U.S.

Curve	Hours from Start
1	2178
2	2345
3	2511
4	6690
5	7077
6	Hours from Start 1968
7	7000
	2100



7160-7
TEMPERATURE IN LA, 7160
at selected time intervals.

19-525-3
March 16, -59
W.S.

Curve	Hours from Start
1	2178
2	3570
3	4934
4	6500
5	7947
6	Hours from Start same
7	700

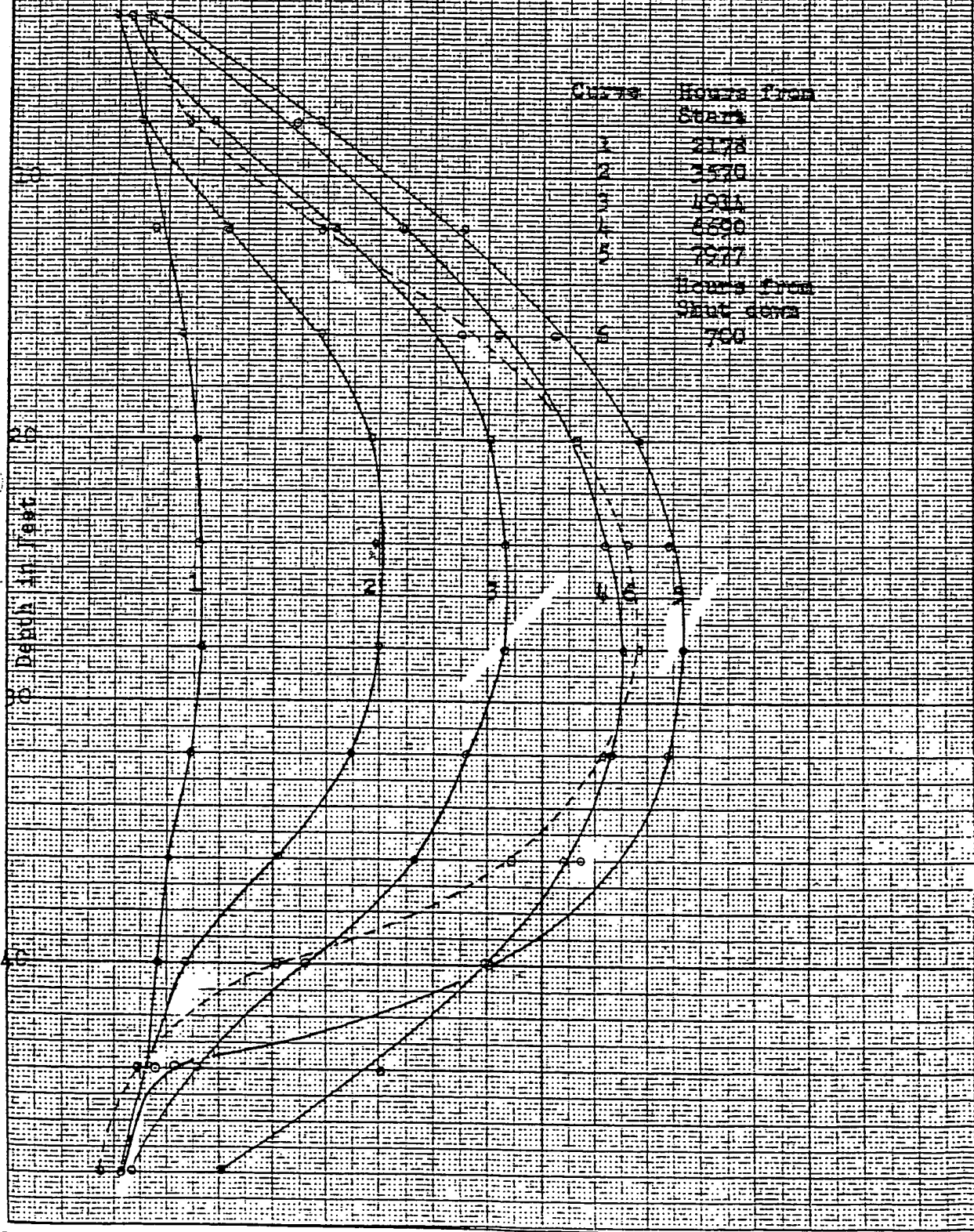


Figure 55

STANDARDIZATION IN 19, 1908
at selected time intervals.

19-013-9.
March 16, 35.
W.S.

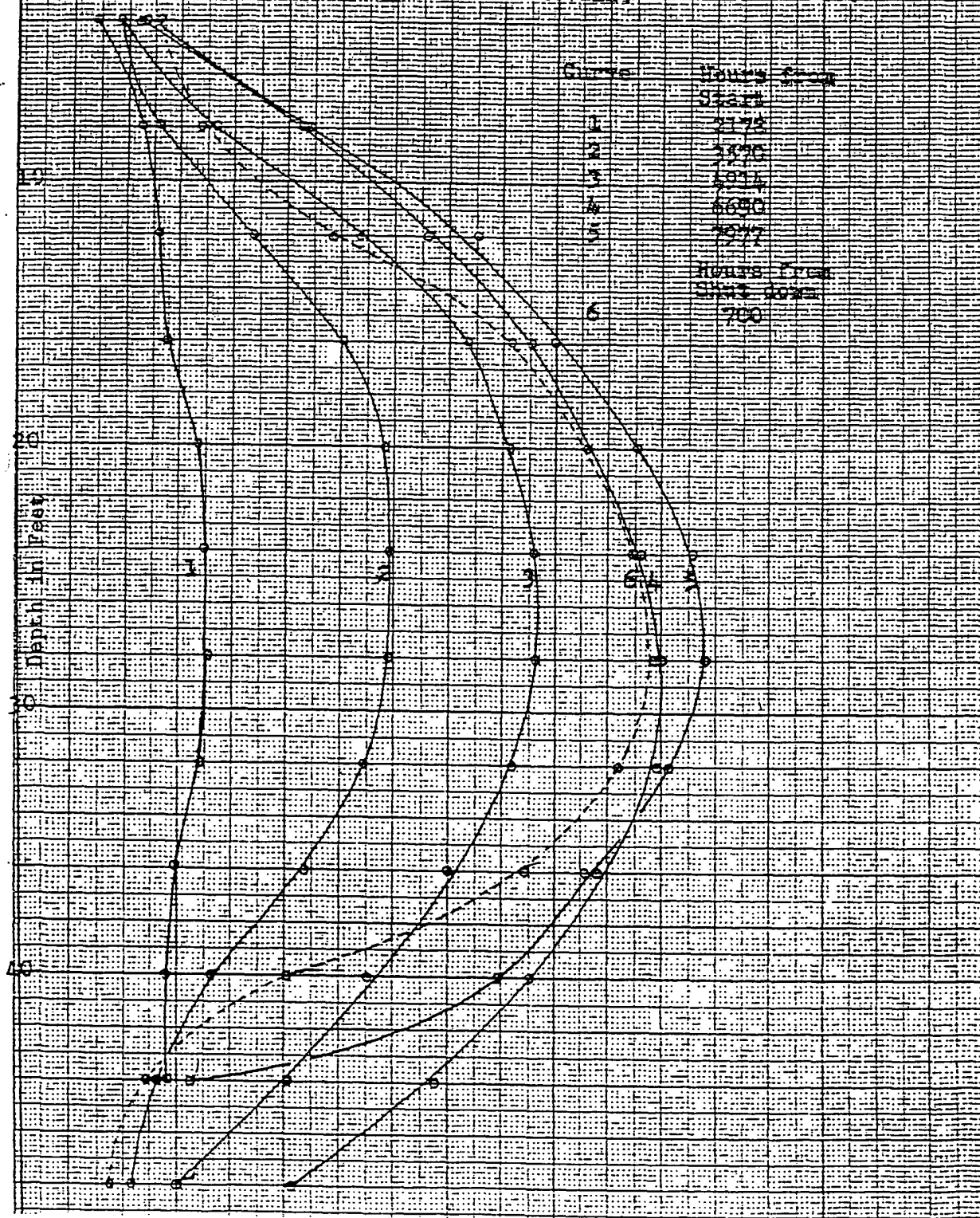
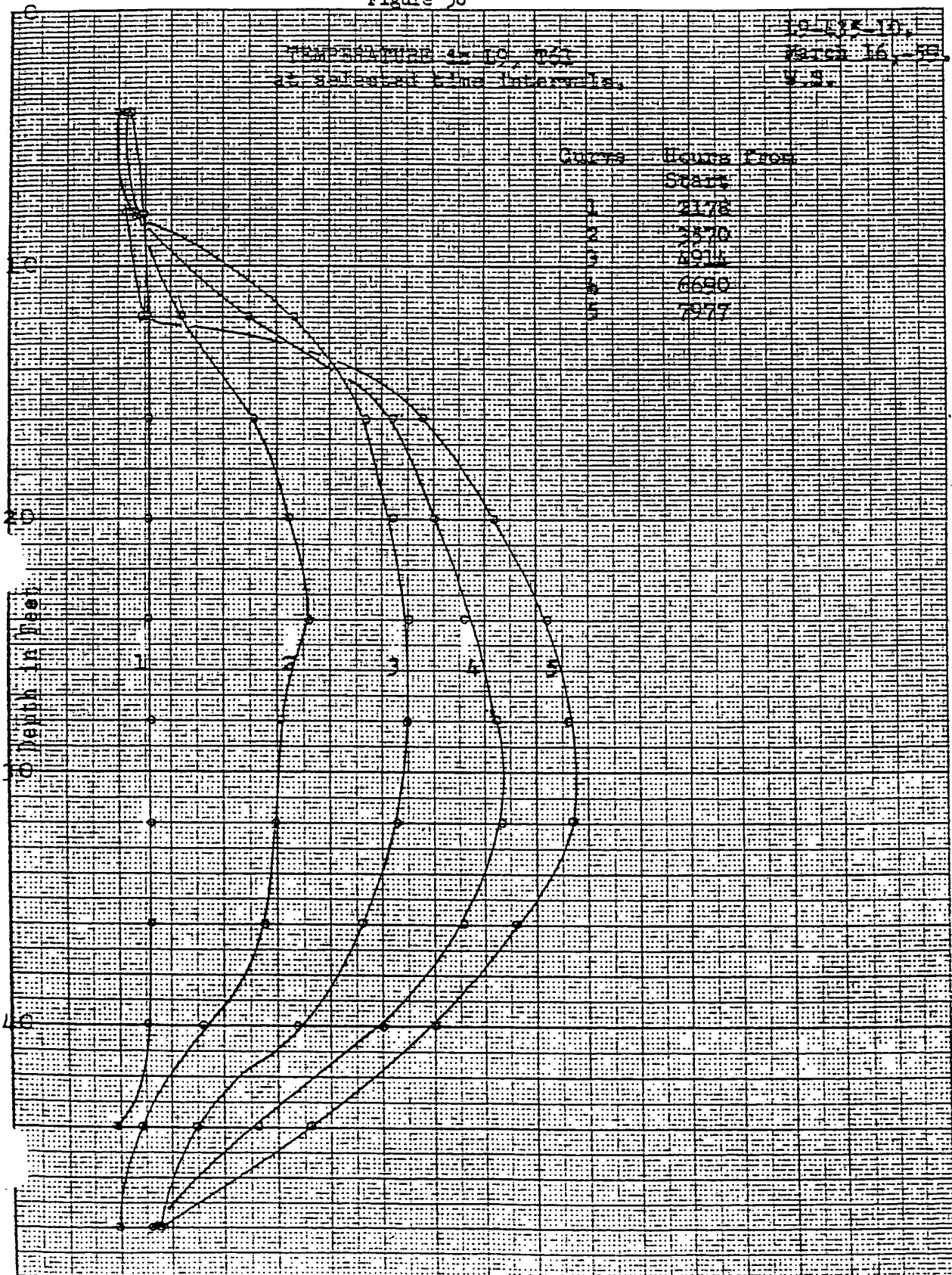


Figure 56

TEMPERATURE IN 10, 20,
30, 40, 50, 60, 70, 80,
90, 100, 110, 120, 130, 140,
150, 160, 170, 180, 190, 200,
210, 220, 230, 240, 250,
260, 270, 280, 290, 300,
310, 320, 330, 340, 350,
360, 370, 380, 390, 400,
410, 420, 430, 440, 450,
460, 470, 480, 490, 500,
510, 520, 530, 540, 550,
560, 570, 580, 590, 600,
610, 620, 630, 640, 650,
660, 670, 680, 690, 700,
710, 720, 730, 740, 750,
760, 770, 780, 790, 800,
810, 820, 830, 840, 850,
860, 870, 880, 890, 900,
910, 920, 930, 940, 950,
960, 970, 980, 990, 1000,
1010, 1020, 1030, 1040,
1050, 1060, 1070, 1080,
1090, 1100, 1110, 1120,
1130, 1140, 1150, 1160,
1170, 1180, 1190, 1200,
1210, 1220, 1230, 1240,
1250, 1260, 1270, 1280,
1290, 1300, 1310, 1320,
1330, 1340, 1350, 1360,
1370, 1380, 1390, 1400,
1410, 1420, 1430, 1440,
1450, 1460, 1470, 1480,
1490, 1500, 1510, 1520,
1530, 1540, 1550, 1560,
1570, 1580, 1590, 1600,
1610, 1620, 1630, 1640,
1650, 1660, 1670, 1680,
1690, 1700, 1710, 1720,
1730, 1740, 1750, 1760,
1770, 1780, 1790, 1800,
1810, 1820, 1830, 1840,
1850, 1860, 1870, 1880,
1890, 1900, 1910, 1920,
1930, 1940, 1950, 1960,
1970, 1980, 1990, 2000,
2010, 2020, 2030, 2040,
2050, 2060, 2070, 2080,
2090, 2100, 2110, 2120,
2130, 2140, 2150, 2160,
2170, 2180, 2190, 2200,
2210, 2220, 2230, 2240,
2250, 2260, 2270, 2280,
2290, 2300, 2310, 2320,
2330, 2340, 2350, 2360,
2370, 2380, 2390, 2400,
2410, 2420, 2430, 2440,
2450, 2460, 2470, 2480,
2490, 2500, 2510, 2520,
2530, 2540, 2550, 2560,
2570, 2580, 2590, 2600,
2610, 2620, 2630, 2640,
2650, 2660, 2670, 2680,
2690, 2700, 2710, 2720,
2730, 2740, 2750, 2760,
2770, 2780, 2790, 2800,
2810, 2820, 2830, 2840,
2850, 2860, 2870, 2880,
2890, 2900, 2910, 2920,
2930, 2940, 2950, 2960,
2970, 2980, 2990, 3000,
3010, 3020, 3030, 3040,
3050, 3060, 3070, 3080,
3090, 3100, 3110, 3120,
3130, 3140, 3150, 3160,
3170, 3180, 3190, 3200,
3210, 3220, 3230, 3240,
3250, 3260, 3270, 3280,
3290, 3300, 3310, 3320,
3330, 3340, 3350, 3360,
3370, 3380, 3390, 3400,
3410, 3420, 3430, 3440,
3450, 3460, 3470, 3480,
3490, 3500, 3510, 3520,
3530, 3540, 3550, 3560,
3570, 3580, 3590, 3600,
3610, 3620, 3630, 3640,
3650, 3660, 3670, 3680,
3690, 3700, 3710, 3720,
3730, 3740, 3750, 3760,
3770, 3780, 3790, 3800,
3810, 3820, 3830, 3840,
3850, 3860, 3870, 3880,
3890, 3900, 3910, 3920,
3930, 3940, 3950, 3960,
3970, 3980, 3990, 4000,
4010, 4020, 4030, 4040,
4050, 4060, 4070, 4080,
4090, 4100, 4110, 4120,
4130, 4140, 4150, 4160,
4170, 4180, 4190, 4200,
4210, 4220, 4230, 4240,
4250, 4260, 4270, 4280,
4290, 4300, 4310, 4320,
4330, 4340, 4350, 4360,
4370, 4380, 4390, 4400,
4410, 4420, 4430, 4440,
4450, 4460, 4470, 4480,
4490, 4500, 4510, 4520,
4530, 4540, 4550, 4560,
4570, 4580, 4590, 4600,
4610, 4620, 4630, 4640,
4650, 4660, 4670, 4680,
4690, 4700, 4710, 4720,
4730, 4740, 4750, 4760,
4770, 4780, 4790, 4800,
4810, 4820, 4830, 4840,
4850, 4860, 4870, 4880,
4890, 4900, 4910, 4920,
4930, 4940, 4950, 4960,
4970, 4980, 4990, 5000,
5010, 5020, 5030, 5040,
5050, 5060, 5070, 5080,
5090, 5100, 5110, 5120,
5130, 5140, 5150, 5160,
5170, 5180, 5190, 5200,
5210, 5220, 5230, 5240,
5250, 5260, 5270, 5280,
5290, 5300, 5310, 5320,
5330, 5340, 5350, 5360,
5370, 5380, 5390, 5400,
5410, 5420, 5430, 5440,
5450, 5460, 5470, 5480,
5490, 5500, 5510, 5520,
5530, 5540, 5550, 5560,
5570, 5580, 5590, 5600,
5610, 5620, 5630, 5640,
5650, 5660, 5670, 5680,
5690, 5700, 5710, 5720,
5730, 5740, 5750, 5760,
5770, 5780, 5790, 5800,
5810, 5820, 5830, 5840,
5850, 5860, 5870, 5880,
5890, 5900, 5910, 5920,
5930, 5940, 5950, 5960,
5970, 5980, 5990, 6000,
6010, 6020, 6030, 6040,
6050, 6060, 6070, 6080,
6090, 6100, 6110, 6120,
6130, 6140, 6150, 6160,
6170, 6180, 6190, 6200,
6210, 6220, 6230, 6240,
6250, 6260, 6270, 6280,
6290, 6300, 6310, 6320,
6330, 6340, 6350, 6360,
6370, 6380, 6390, 6400,
6410, 6420, 6430, 6440,
6450, 6460, 6470, 6480,
6490, 6500, 6510, 6520,
6530, 6540, 6550, 6560,
6570, 6580, 6590, 6600,
6610, 6620, 6630, 6640,
6650, 6660, 6670, 6680,
6690, 6700, 6710, 6720,
6730, 6740, 6750, 6760,
6770, 6780, 6790, 6800,
6810, 6820, 6830, 6840,
6850, 6860, 6870, 6880,
6890, 6900, 6910, 6920,
6930, 6940, 6950, 6960,
6970, 6980, 6990, 7000,
7010, 7020, 7030, 7040,
7050, 7060, 7070, 7080,
7090, 7100, 7110, 7120,
7130, 7140, 7150, 7160,
7170, 7180, 7190, 7200,
7210, 7220, 7230, 7240,
7250, 7260, 7270, 7280,
7290, 7300, 7310, 7320,
7330, 7340, 7350, 7360,
7370, 7380, 7390, 7400,
7410, 7420, 7430, 7440,
7450, 7460, 7470, 7480,
7490, 7500, 7510, 7520,
7530, 7540, 7550, 7560,
7570, 7580, 7590, 7600,
7610, 7620, 7630, 7640,
7650, 7660, 7670, 7680,
7690, 7700, 7710, 7720,
7730, 7740, 7750, 7760,
7770, 7780, 7790, 7800,
7810, 7820, 7830, 7840,
7850, 7860, 7870, 7880,
7890, 7900, 7910, 7920,
7930, 7940, 7950, 7960,
7970, 7980, 7990, 8000,
8010, 8020, 8030, 8040,
8050, 8060, 8070, 8080,
8090, 8100, 8110, 8120,
8130, 8140, 8150, 8160,
8170, 8180, 8190, 8200,
8210, 8220, 8230, 8240,
8250, 8260, 8270, 8280,
8290, 8300, 8310, 8320,
8330, 8340, 8350, 8360,
8370, 8380, 8390, 8400,
8410, 8420, 8430, 8440,
8450, 8460, 8470, 8480,
8490, 8500, 8510, 8520,
8530, 8540, 8550, 8560,
8570, 8580, 8590, 8600,
8610, 8620, 8630, 8640,
8650, 8660, 8670, 8680,
8690, 8700, 8710, 8720,
8730, 8740, 8750, 8760,
8770, 8780, 8790, 8800,
8810, 8820, 8830, 8840,
8850, 8860, 8870, 8880,
8890, 8900, 8910, 8920,
8930, 8940, 8950, 8960,
8970, 8980, 8990, 9000,
9010, 9020, 9030, 9040,
9050, 9060, 9070, 9080,
9090, 9100, 9110, 9120,
9130, 9140, 9150, 9160,
9170, 9180, 9190, 9200,
9210, 9220, 9230, 9240,
9250, 9260, 9270, 9280,
9290, 9300, 9310, 9320,
9330, 9340, 9350, 9360,
9370, 9380, 9390, 9400,
9410, 9420, 9430, 9440,
9450, 9460, 9470, 9480,
9490, 9500, 9510, 9520,
9530, 9540, 9550, 9560,
9570, 9580, 9590, 9600,
9610, 9620, 9630, 9640,
9650, 9660, 9670, 9680,
9690, 9700, 9710, 9720,
9730, 9740, 9750, 9760,
9770, 9780, 9790, 9800,
9810, 9820, 9830, 9840,
9850, 9860, 9870, 9880,
9890, 9900, 9910, 9920,
9930, 9940, 9950, 9960,
9970, 9980, 9990, 10000

10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000

Cuts	Hours From
1	Start
2	2178
3	3870
4	4914
5	6050
6	7077



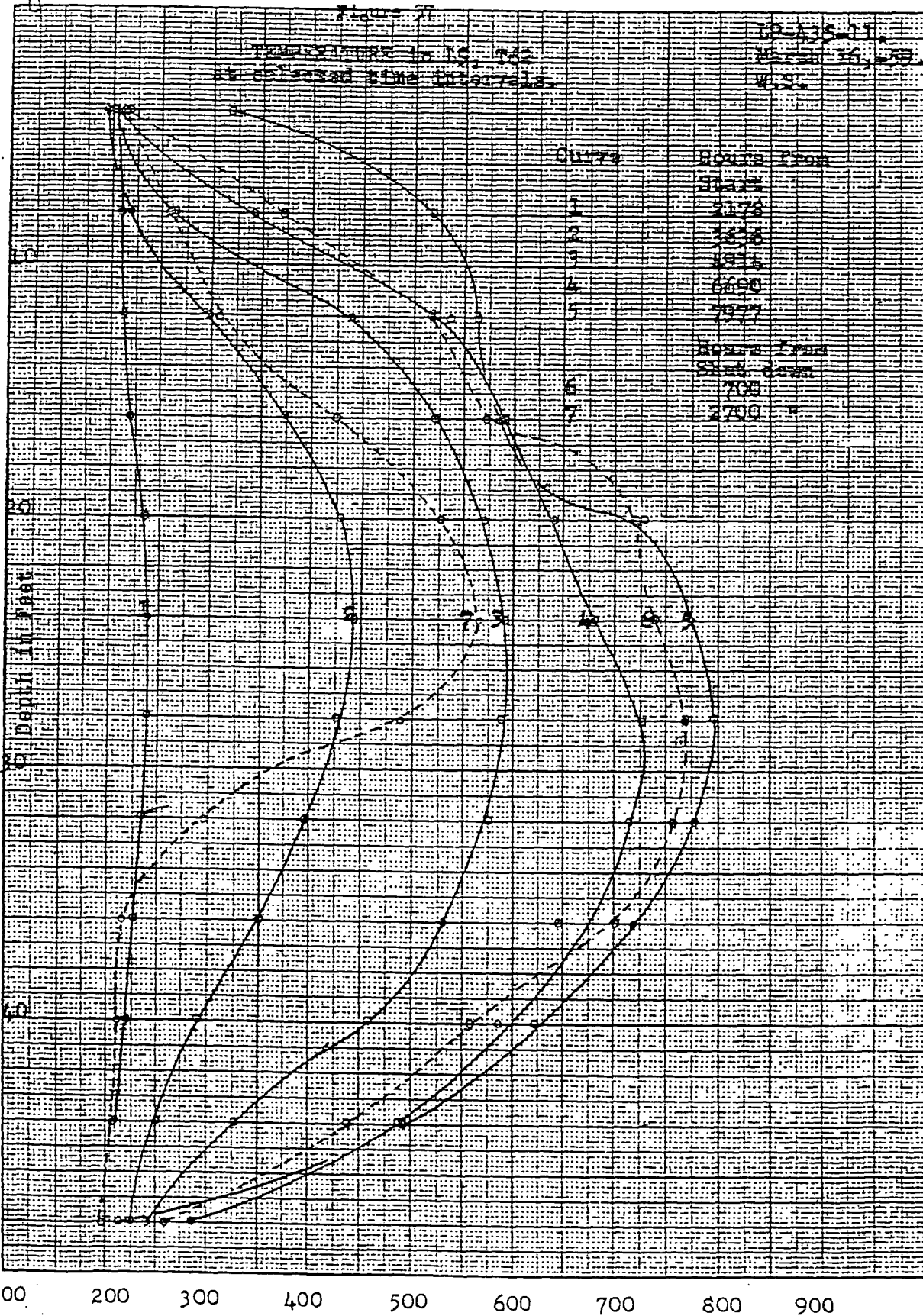


Figure 58

TEMPERATURES IN F⁰ vs
at selected time intervals.

10-553-12,
March 18, 1950
W.S.

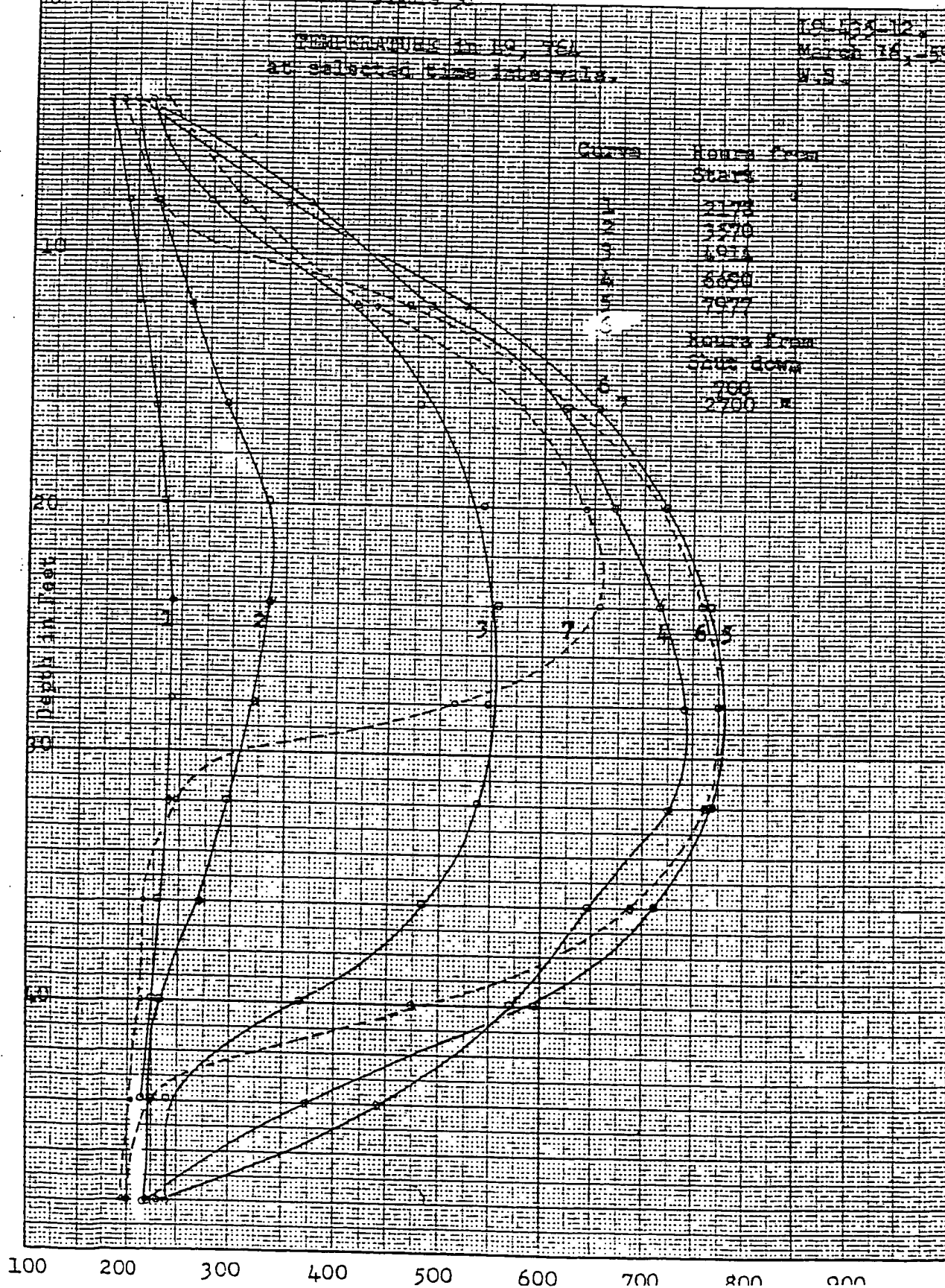


Figure 59

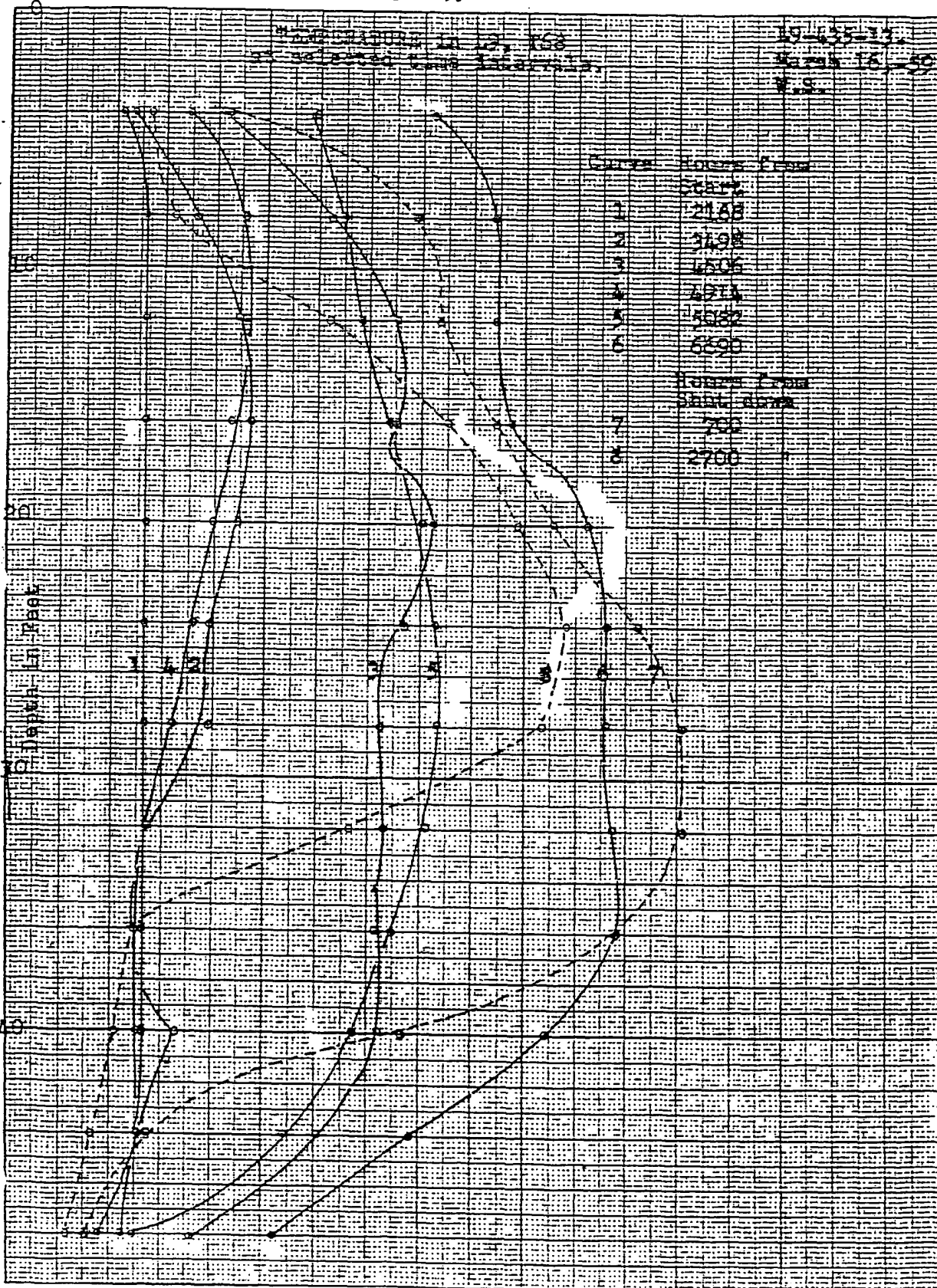


Figure 60

TEMPERATURE IN 10' TWT
at selected time intervals.

CS-477-1A
March 16, 1960
W.S.

Curve	Hours from Start
1	1339
2	1738
3	2022

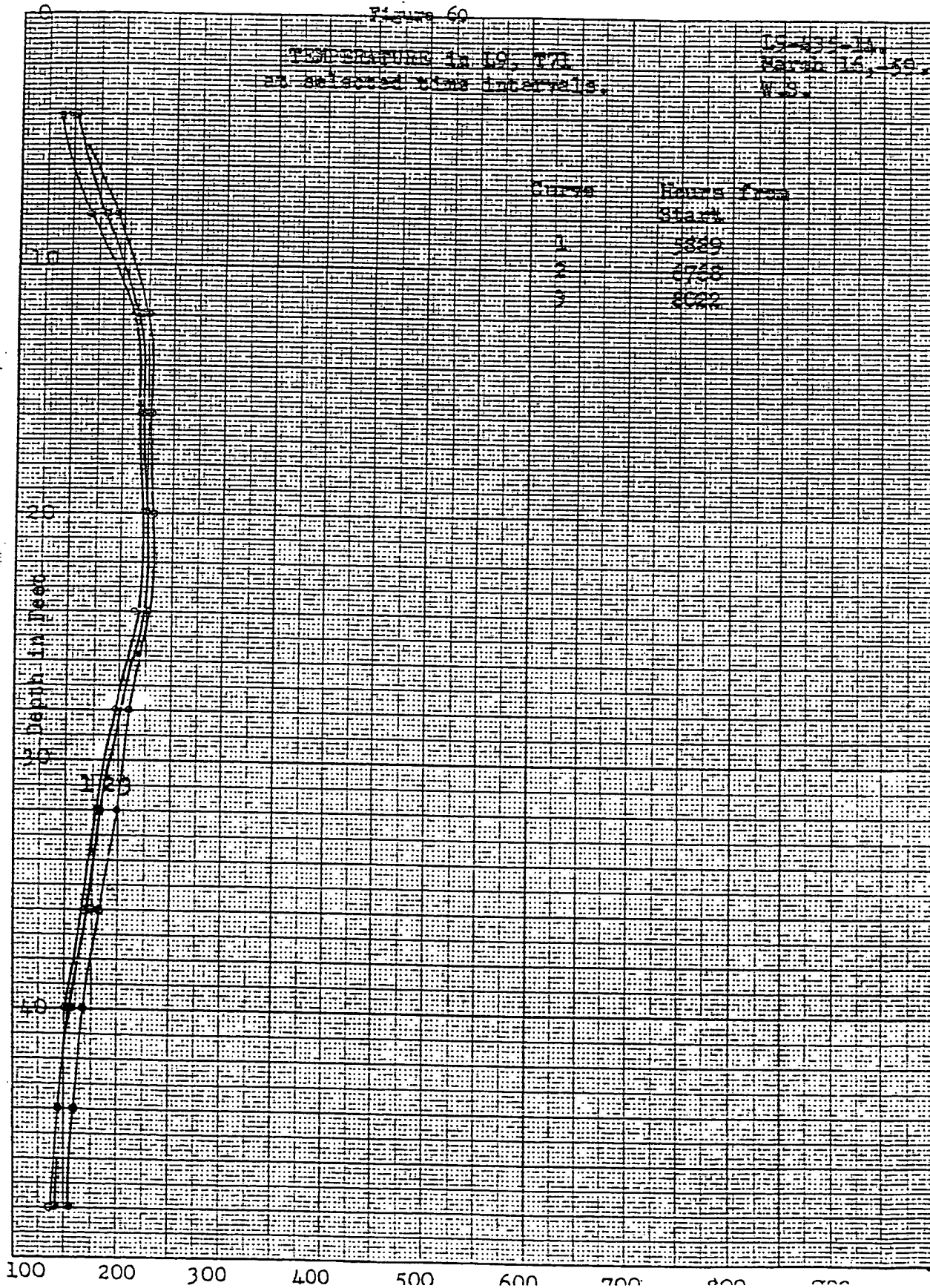


Figure 61

TEMPERATURE IN L9, P710A
at selected time intervals.

10-135-15
March 10, 1955
F.S.

Curve	Hours from Start
1	2178
2	3870
3	4878
4	6600
5	7877

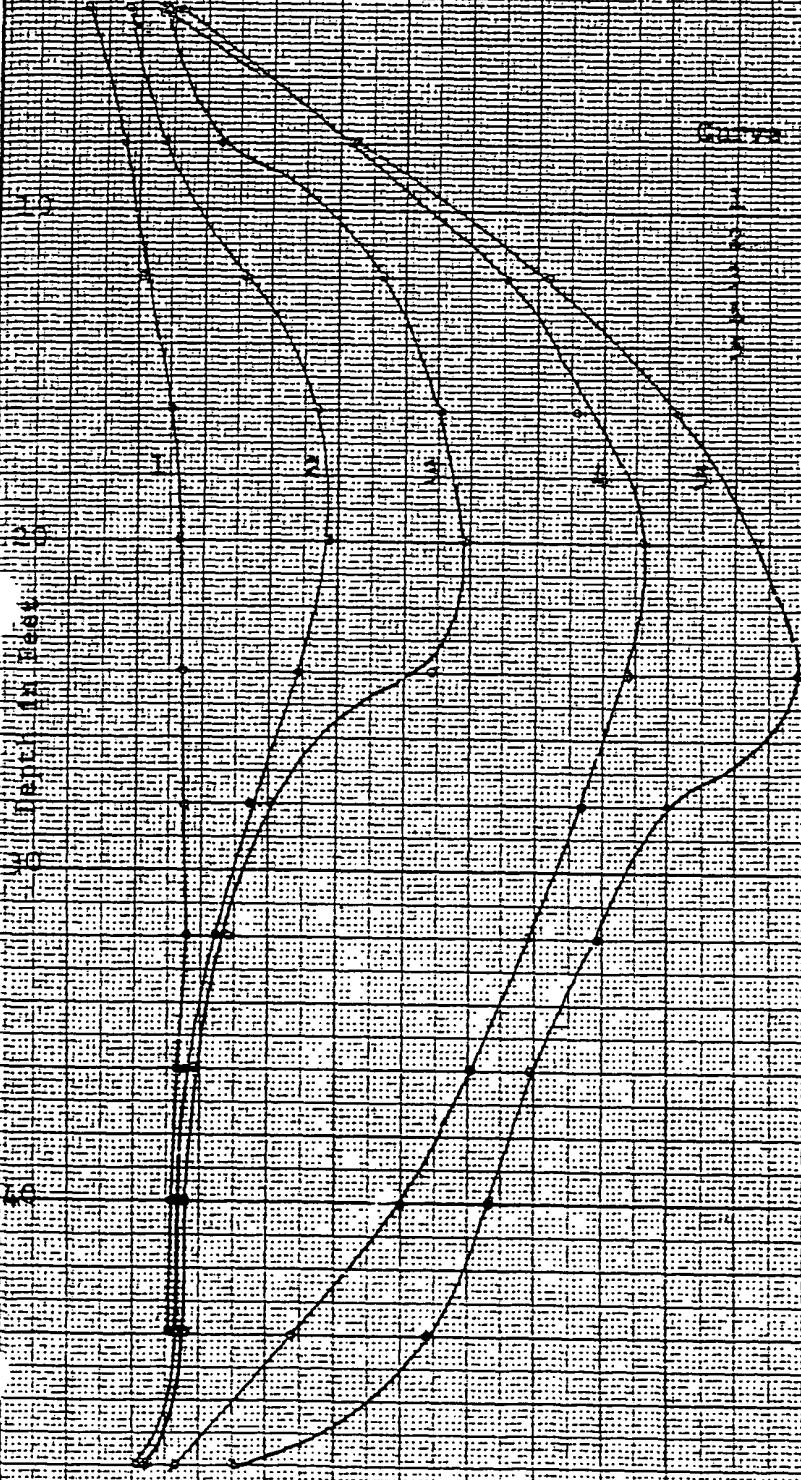


Figure 62

TRANSMISSION IN LB. T/TON
at selected time intervals.

Curve 1-5.
Start 1A, 5C
U.S.

Curve

Hours from
Start

1
2
3
4
5
6

2178
2570
2914
3070
3977

2720 hours from
start down

Depth in Feet

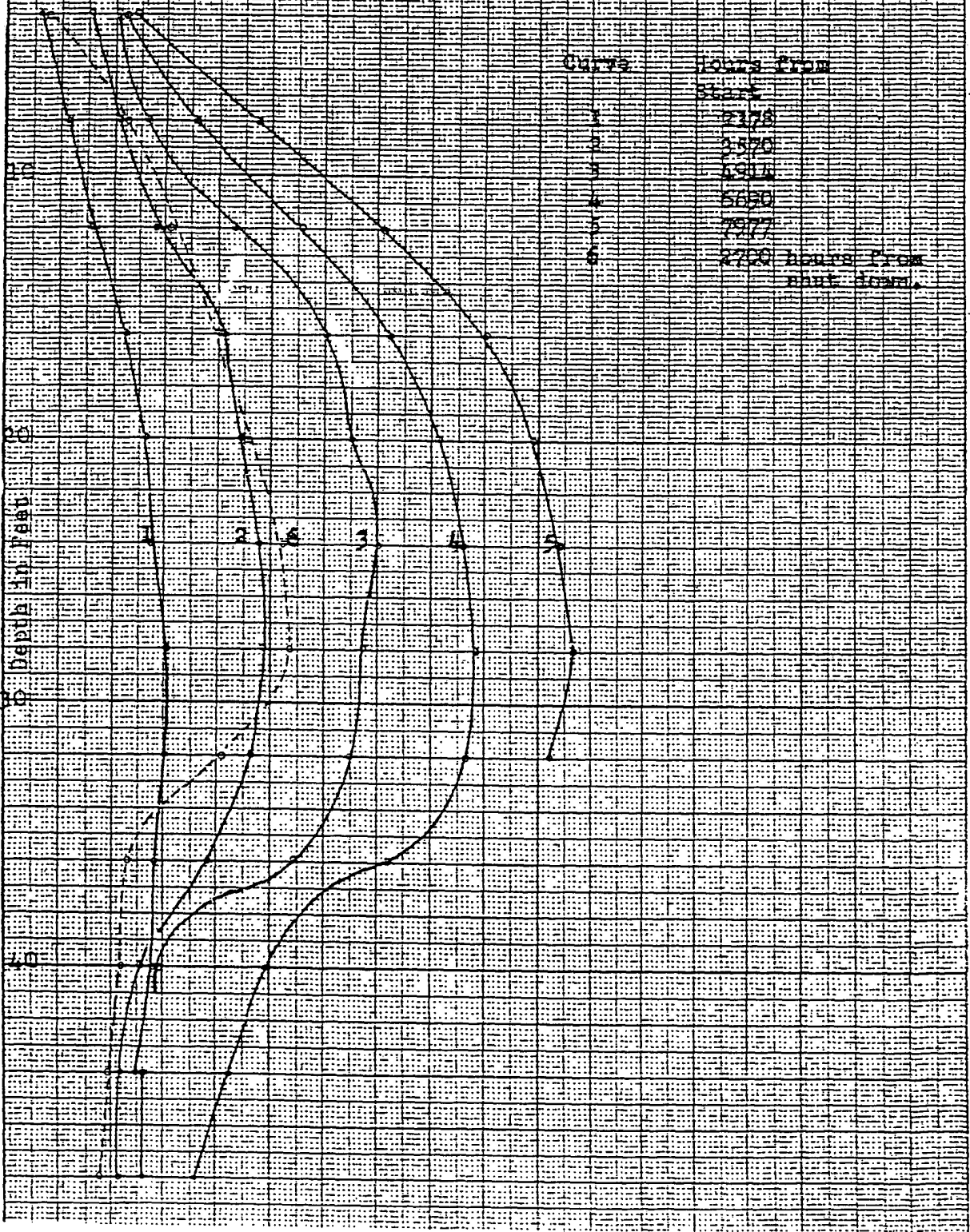
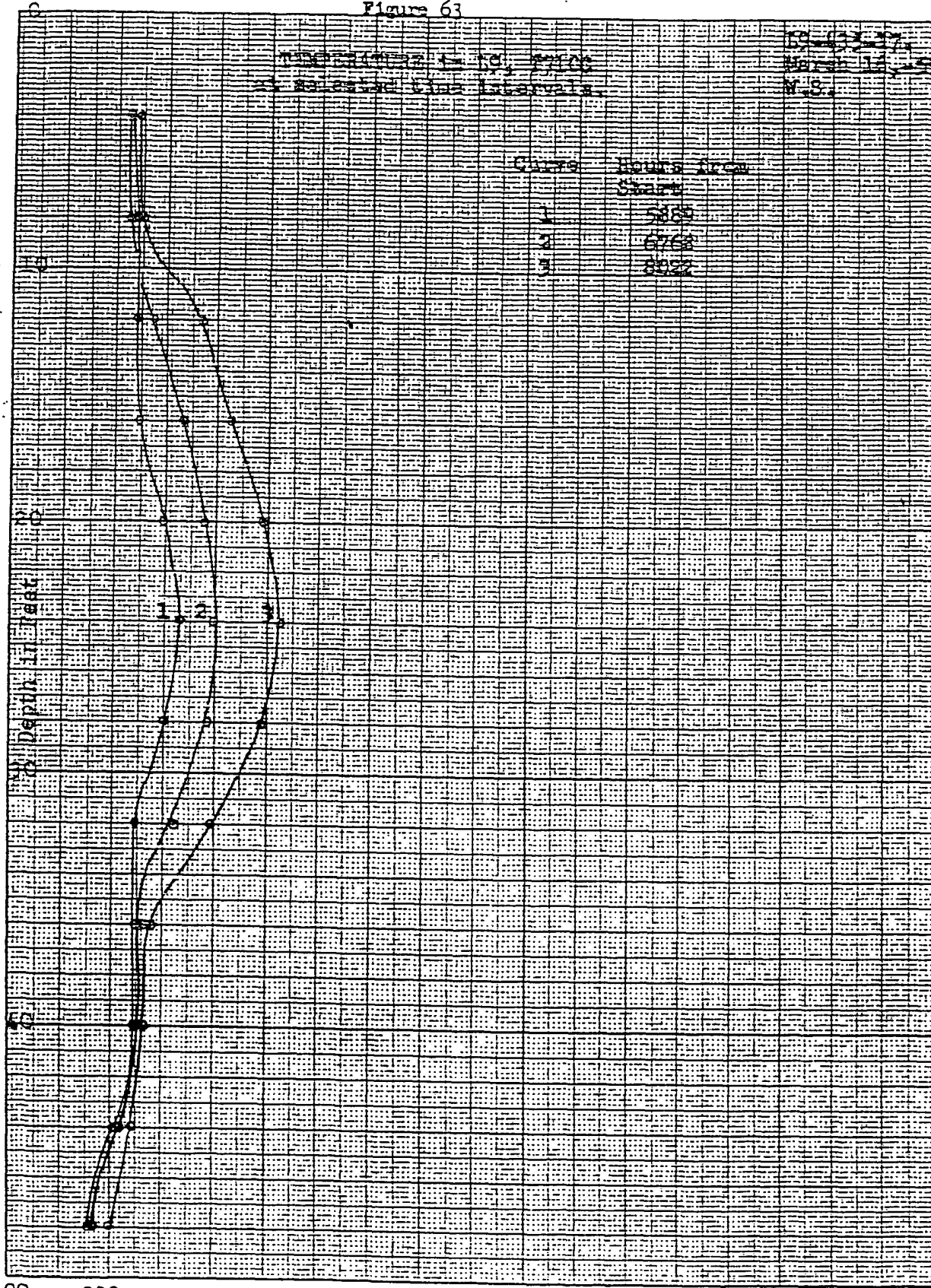


Figure 63

Temperature in °C, 57100
at selected time intervals.

53-43-27
March 11, 1959
N.S.

Curve	Bottom Area Chart
1	5885
2	6762
3	8022



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RECEIVED AT U. S. A.

Figure 4
 TEMPERATURE IN °C, °F
 at selected time intervals

10-135-18
 March 16, 1964
 U.S.

Curve	Hours From
	Start
1	2143
2	3579
3	4914
4	6600
5	7977
	Hours From
	Start down
6	700
7	2790

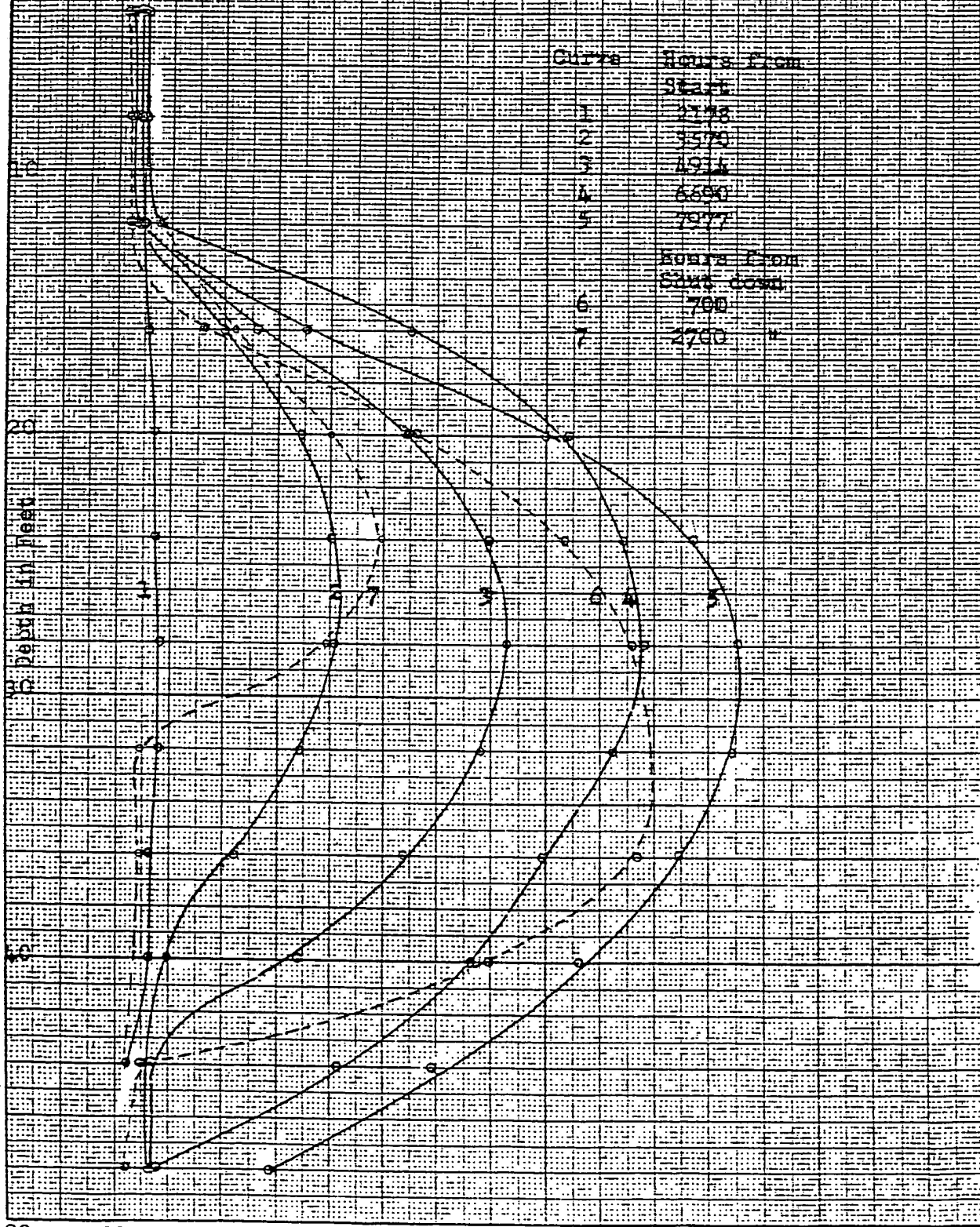


Figure 63
 TEMPERATURE in °C, °F
 at selected time intervals

0-100-10
 March 16, 50
 8.2

Curve	Hours From
1	Start
2	2175
3	3570
4	4975
5	6690
6	7977
7	Hours From
8	Start down
9	700
10	2700

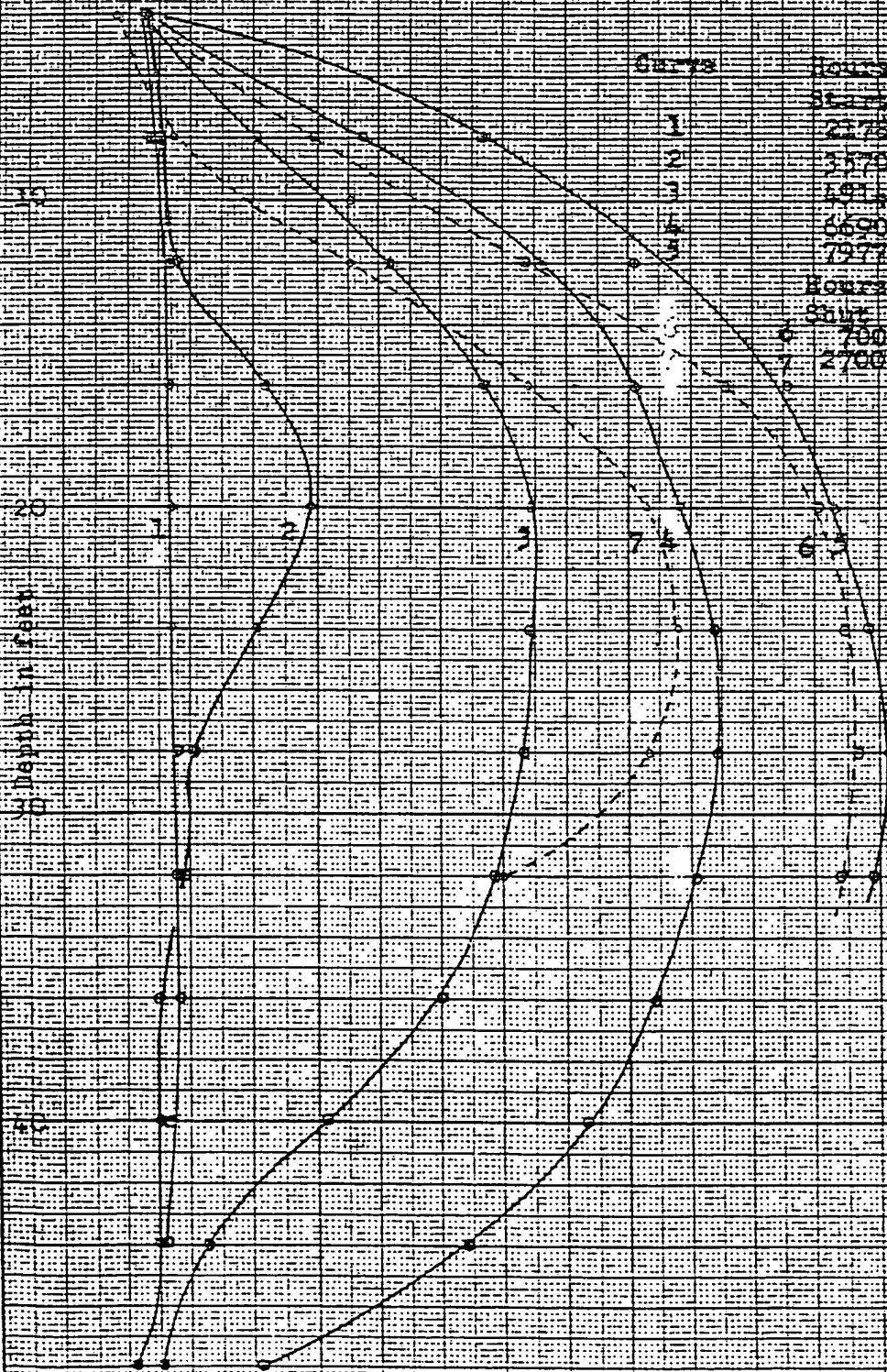
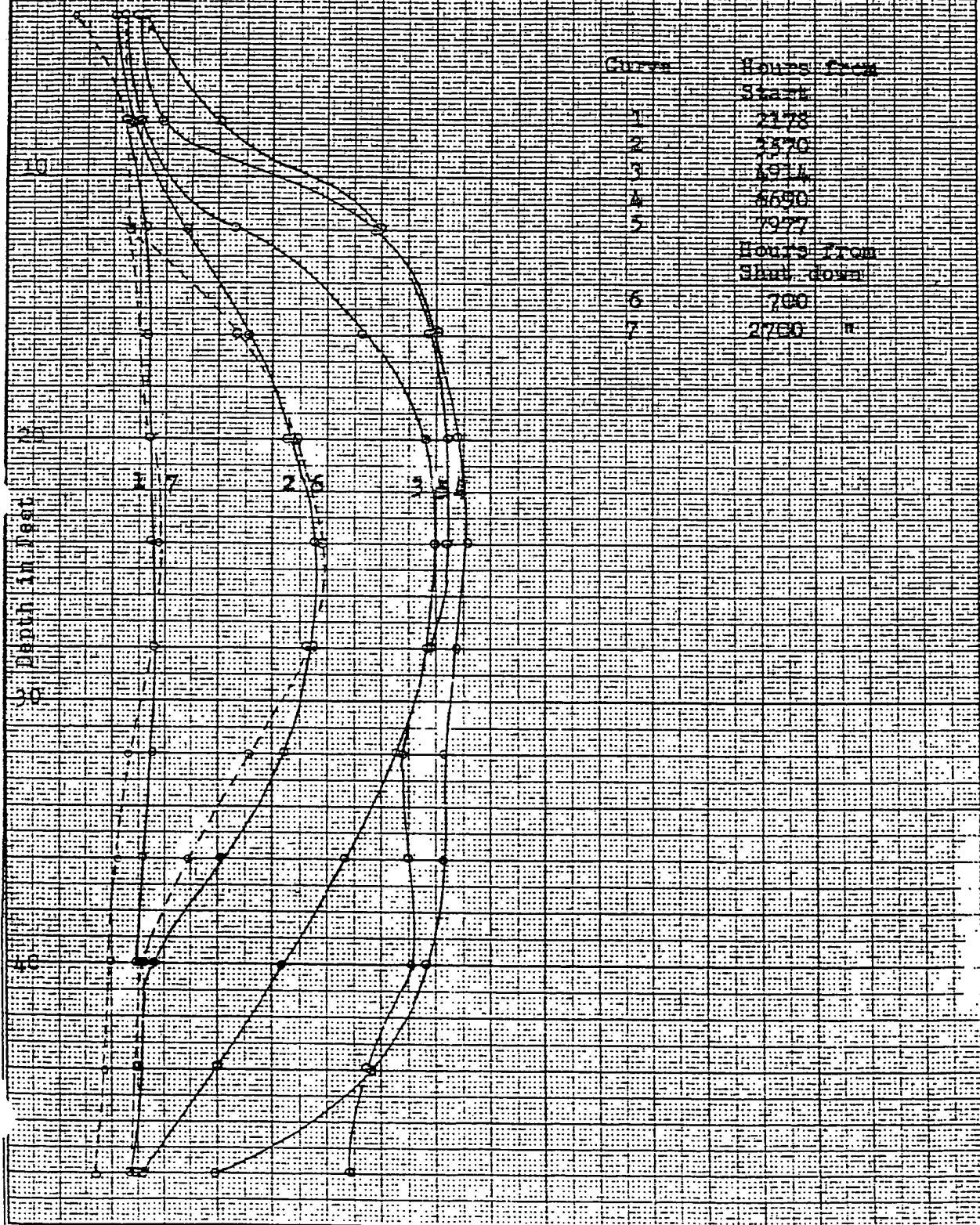


Figure 66
TEMPERATURE IN IQ, °F
at selected time intervals

IC-433-20
March 16, 50
W.S.



7-20-67
 THERMISTOR IN I.C. #106
 at selected time intervals

15-435-27
 March 16, -59
 W.S.

Curve	Height From
	Start
1	5758
2	6768
3	8022

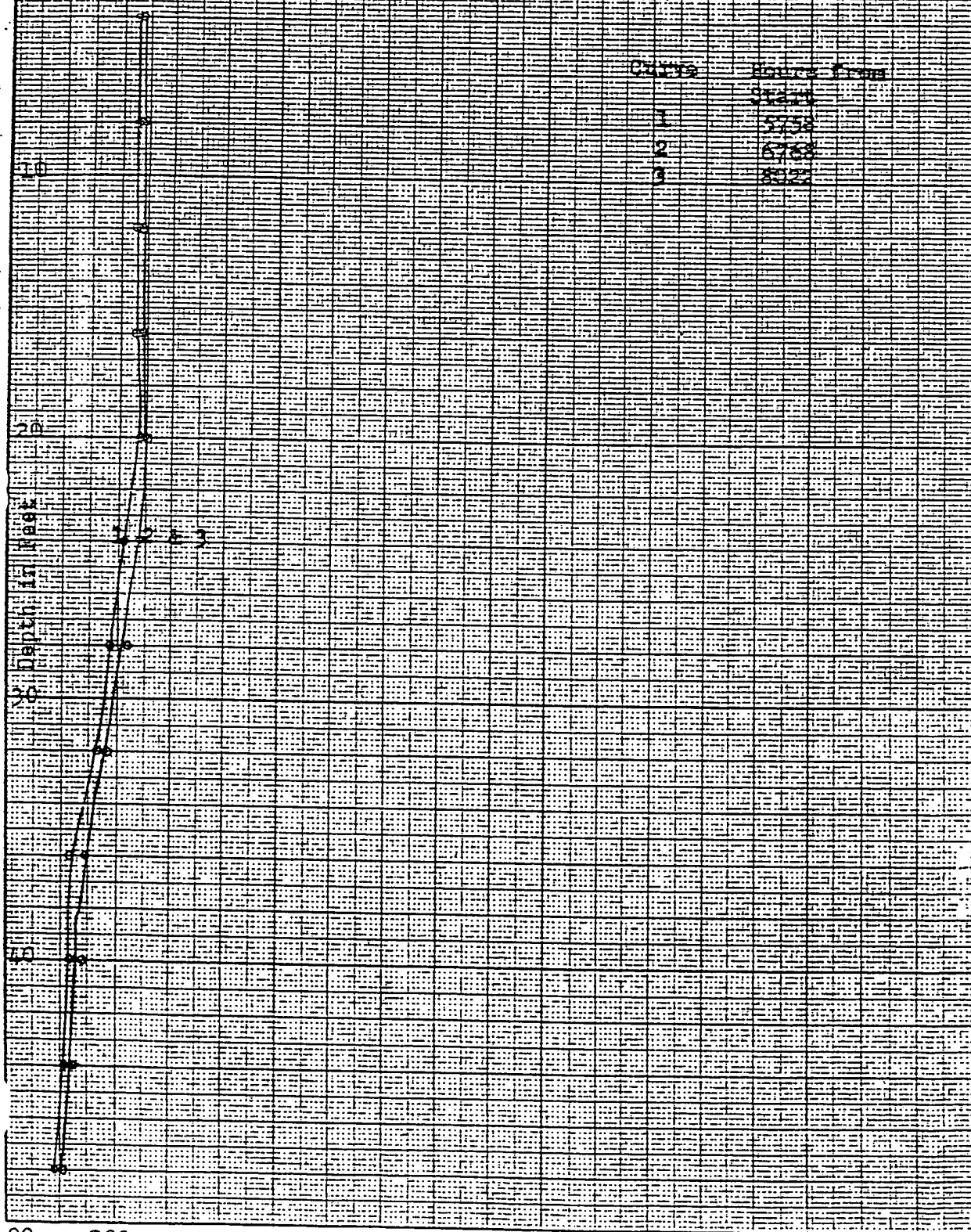
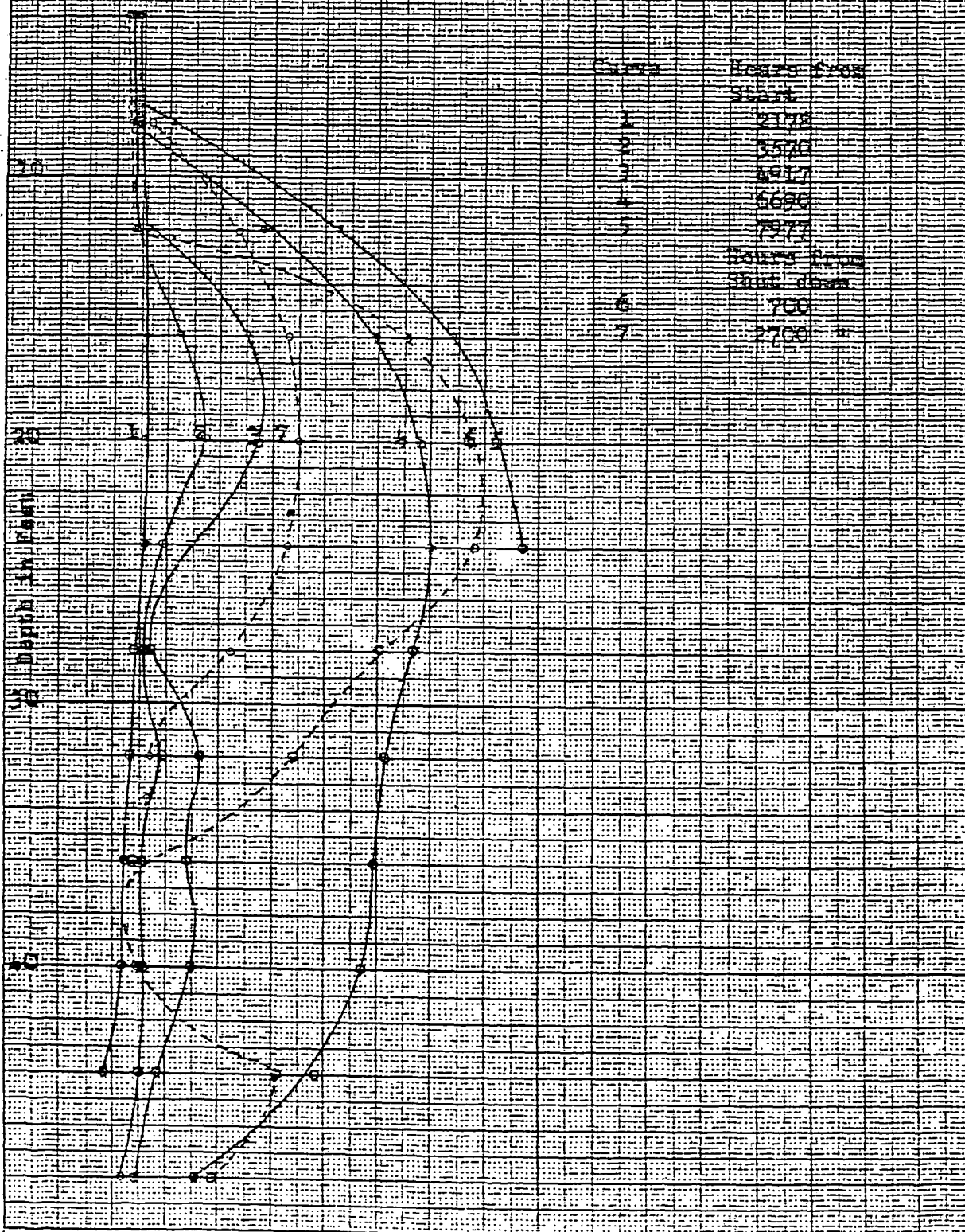


Figure 62
TEMPERATURE IN °C, WIDE
at selected time intervals.

FD-123-251
March 16, 1950
U.S.



19.38
April 12.59.48.

Figure 15

TEMPERATURE IN 19. T22

At 12.23.48 first and average temp.
between 14 and 22 1948.

CITY	First Temp	Average
1	14	12
2	12	12
3	28	28
4	24	24

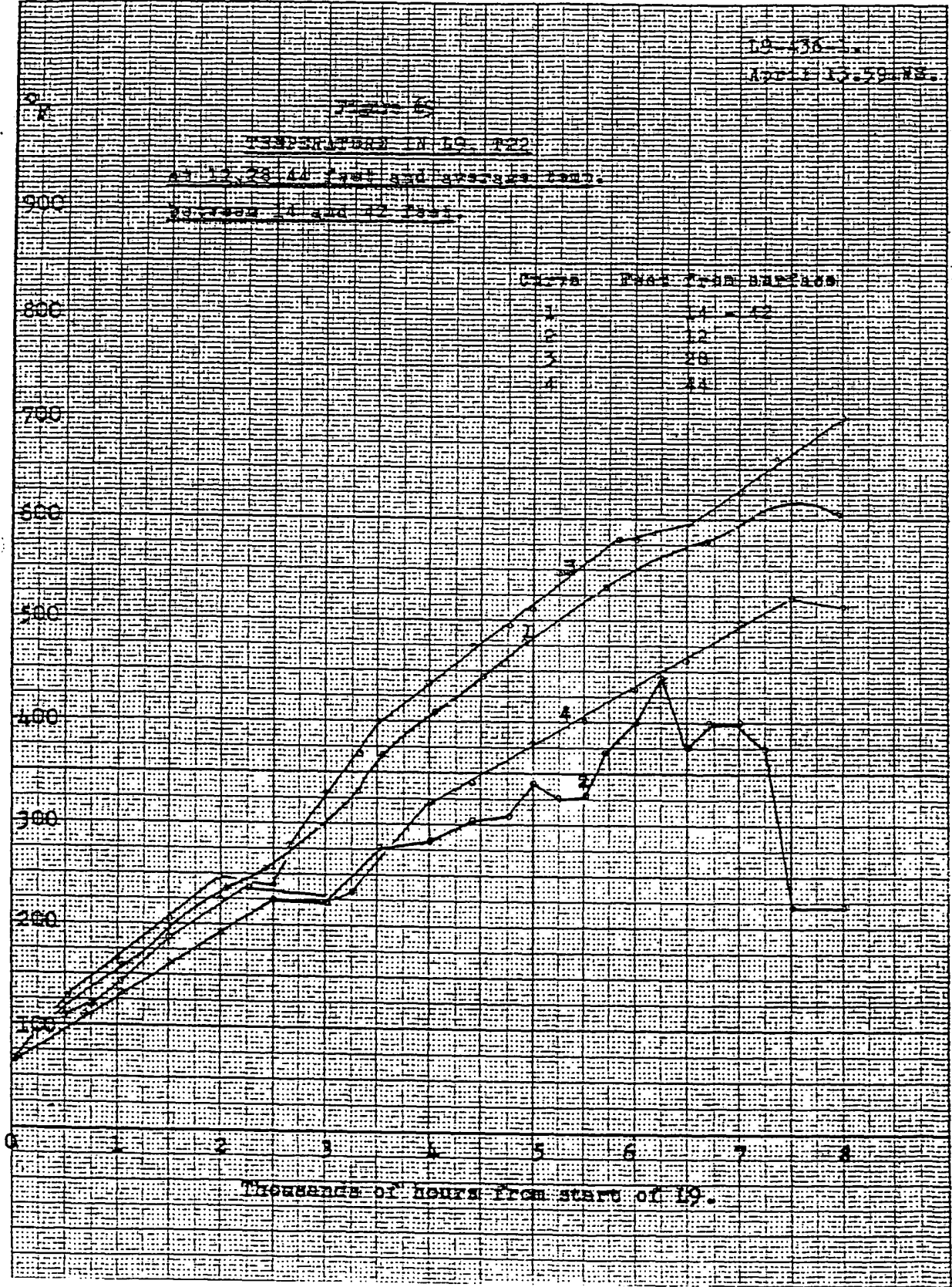


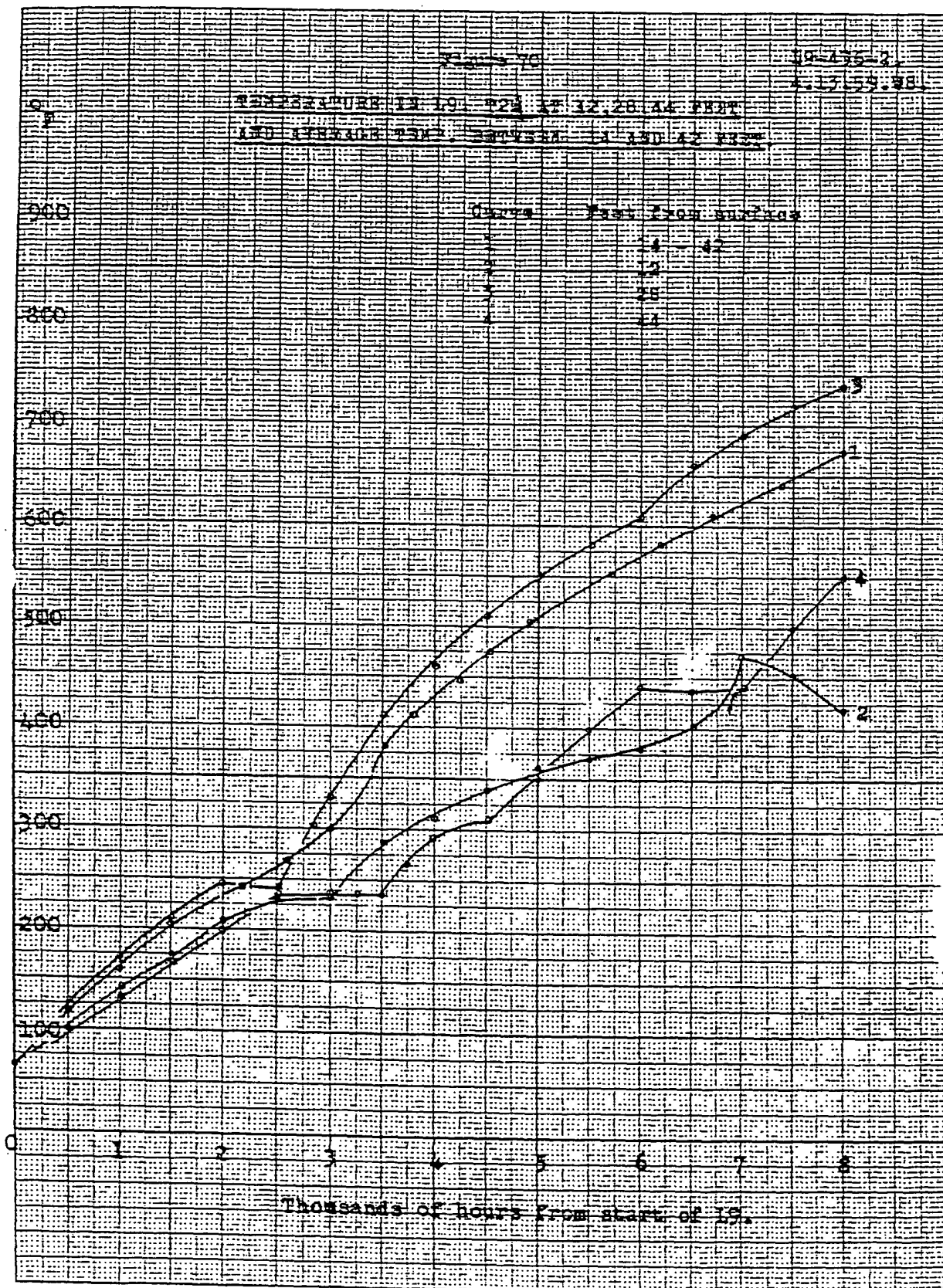
Figure 70

39-475-2

4.13.59.58

TEMPERATURE IN °F AT 12, 28, 44 FEET
AND AVERAGE TEMP. BETWEEN 12 AND 42 FEET

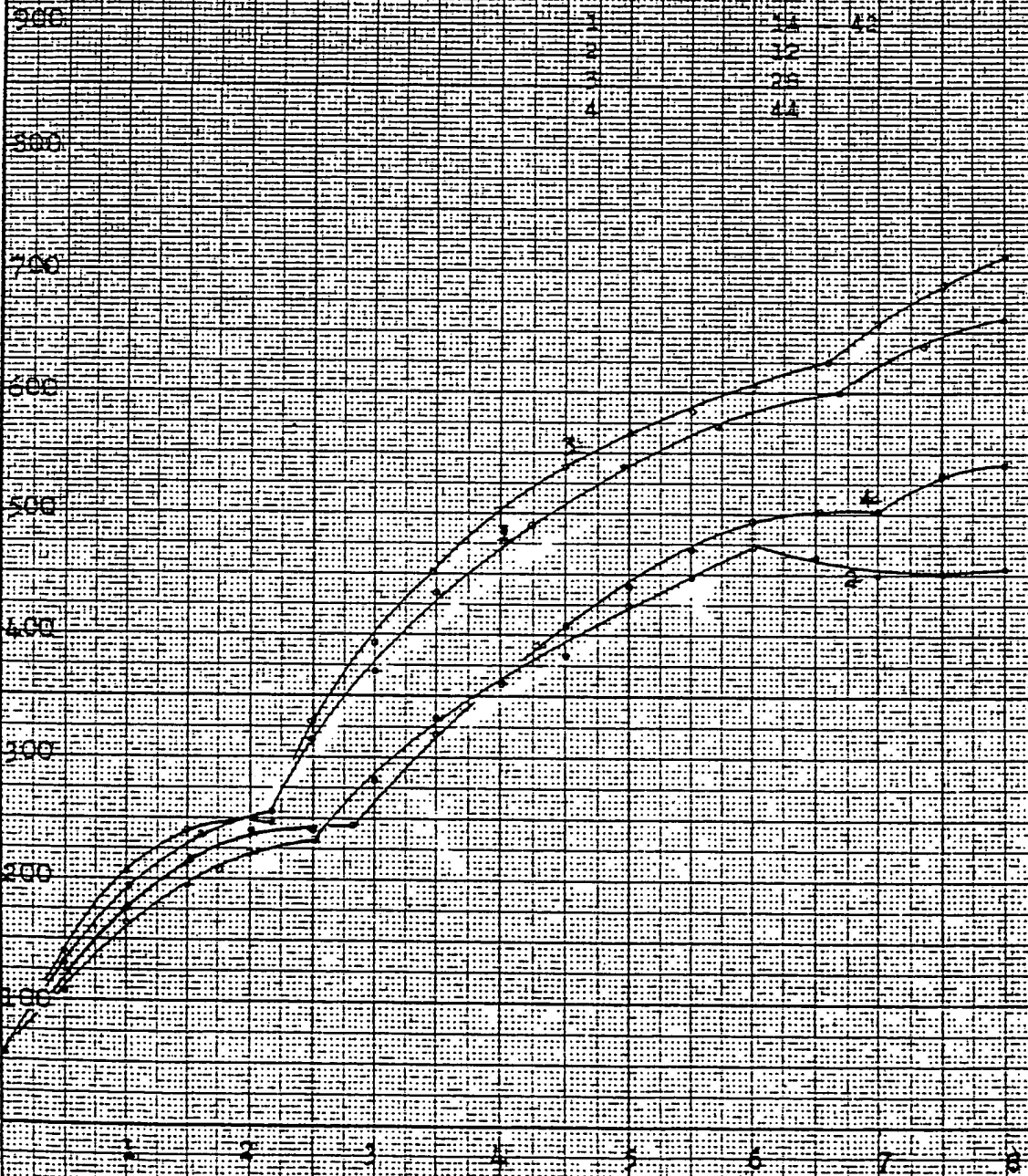
Curve	Feet From Surface
1	12
2	28
3	44
4	Average



TEMPERATURE IN LG. TUB AT 12, 25, 44 FEET
AND AVERAGE TEMP. BETWEEN 12 AND 44 FEET.

10-436-3
4-17-59-48

CURVES	FEET FROM SURFACE
1	12 44
2	12
3	25
4	44



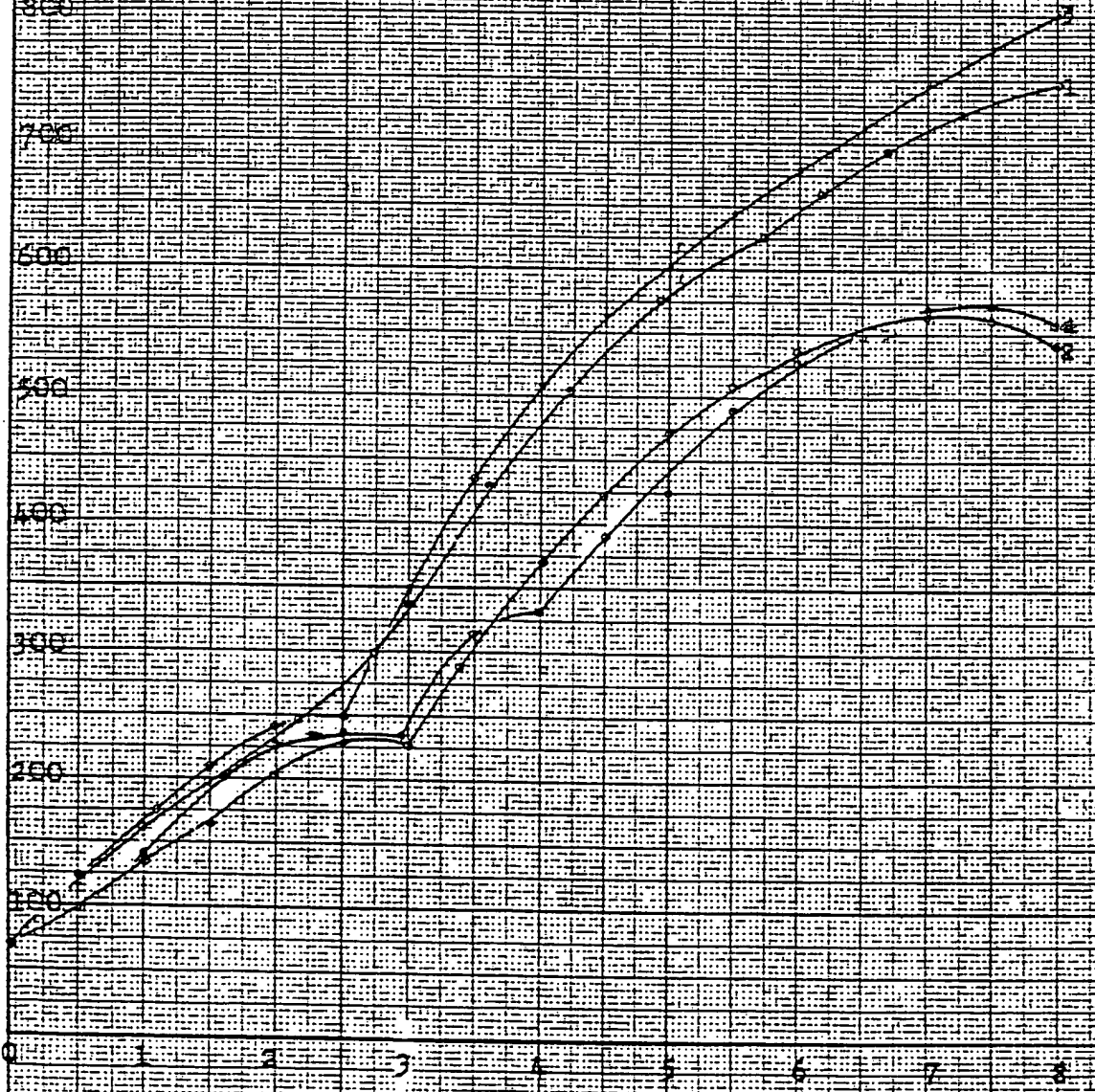
Thousands of hours from start of LG.

Figure 73

59-436-A

TEMPERATURE IN IR TAP AT 10, 20, 40 FEET
AND AVERAGE TEMP. BETWEEN 10 AND 40 FEET.

Curve	Feet from surface
1	10-40
2	10
3	20
4	40



Thousands of holes from start of 10.

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WILLIAMS-SON

Figure 7

49-426-5

6-13-59-22

TEMPERATURE IN °F. AT 12, 23, 34 FEET

AT 12 FEET BETWEEN 14 AND 42 FEET

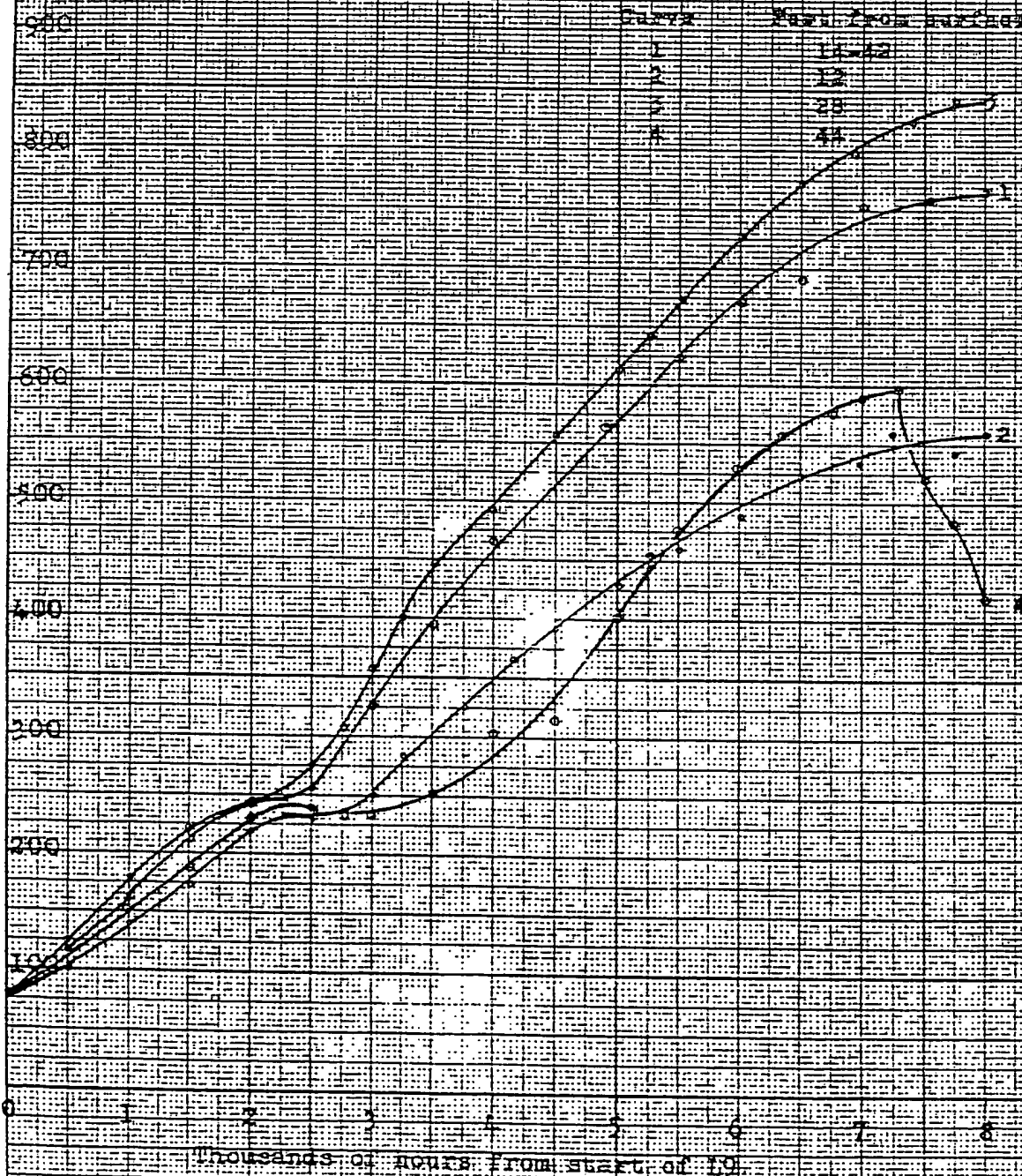
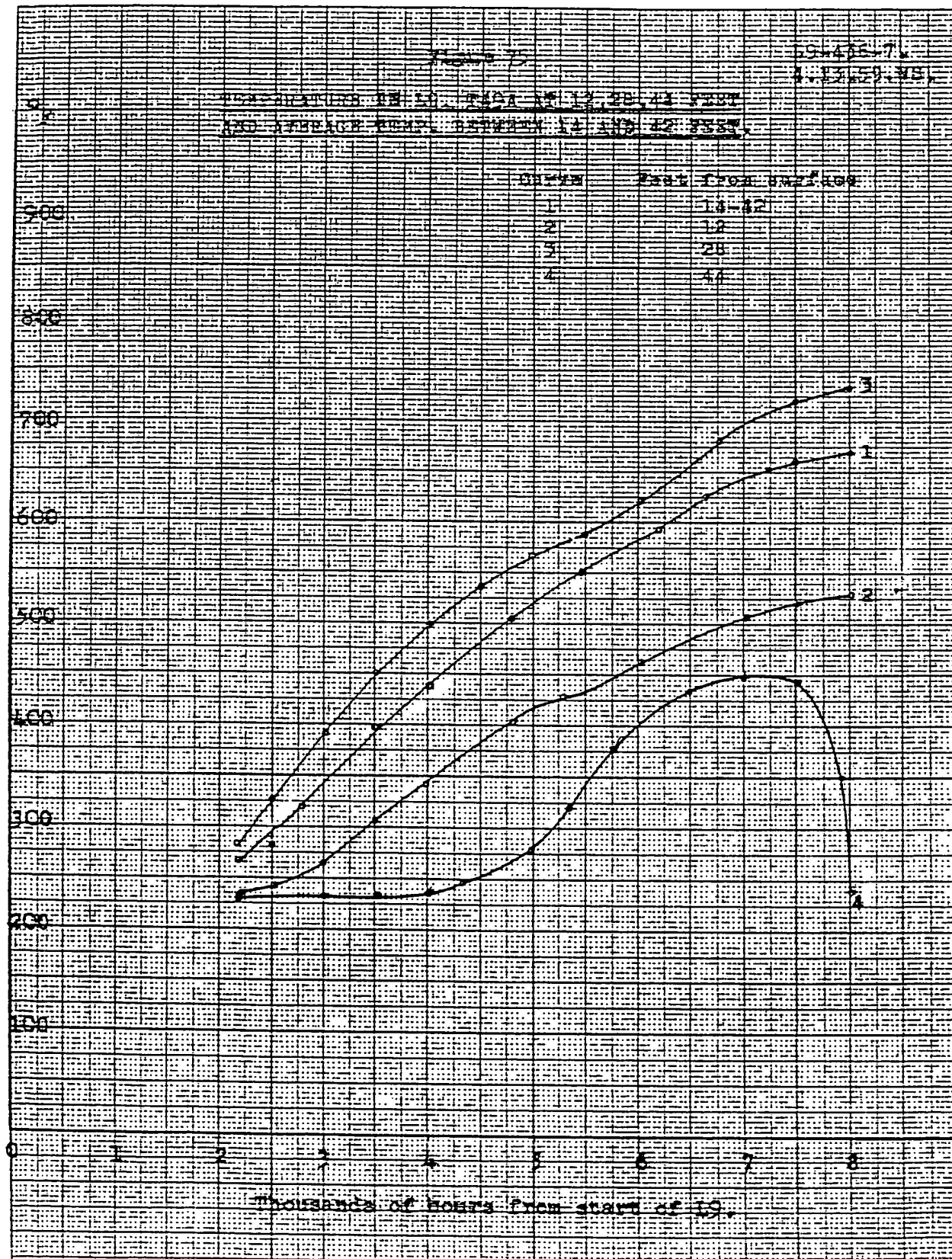


Figure 14

HS-43E-6.
4.15.59.48

TEMPERATURE IN DEG. FAE AT 10, 20, 40 FEET
AND AVERAGE TEMP. BETWEEN 10 AND 40 FEET.





7-27-76

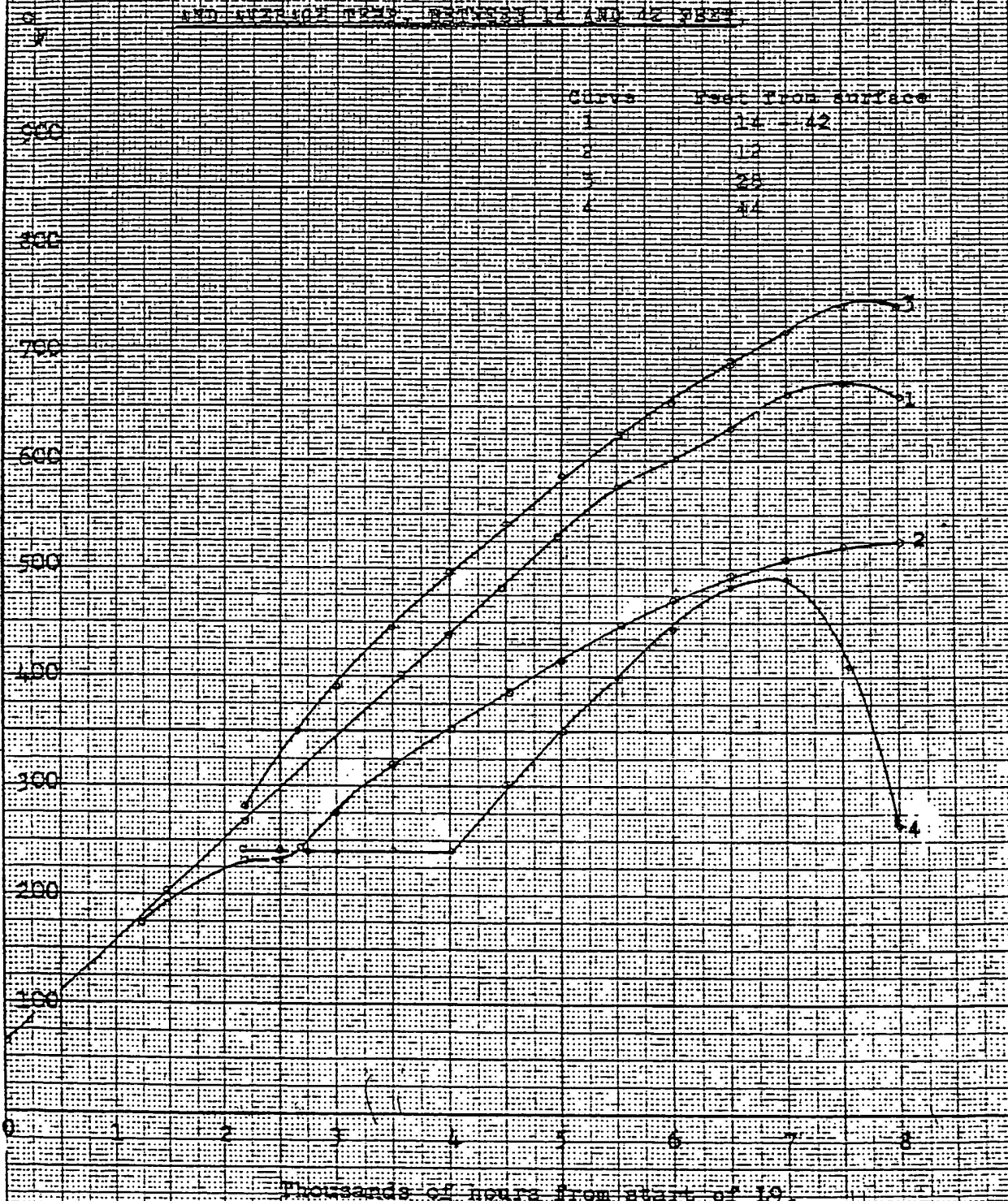
10-436-2.

4-17-59-43.

TEMPERATURE IN 69. FLOZ AT 12.28.44 PRESS

AND AVERAGE PRESS. BETWEEN 11 AND 12 PRESS

Curve	Feet from surface
1	14-42
2	12
3	28
4	41



THERMAL FLUX IN 89, 96N AT 12, 26, 44 DEGR
 AND 100, 105 DEGRS LONGITUDE 14, 22, 42 DEGR

19-458-9
 4.13.49.WS.

Curve	Feet from surface
1	14 42
2	12
3	28
4	44

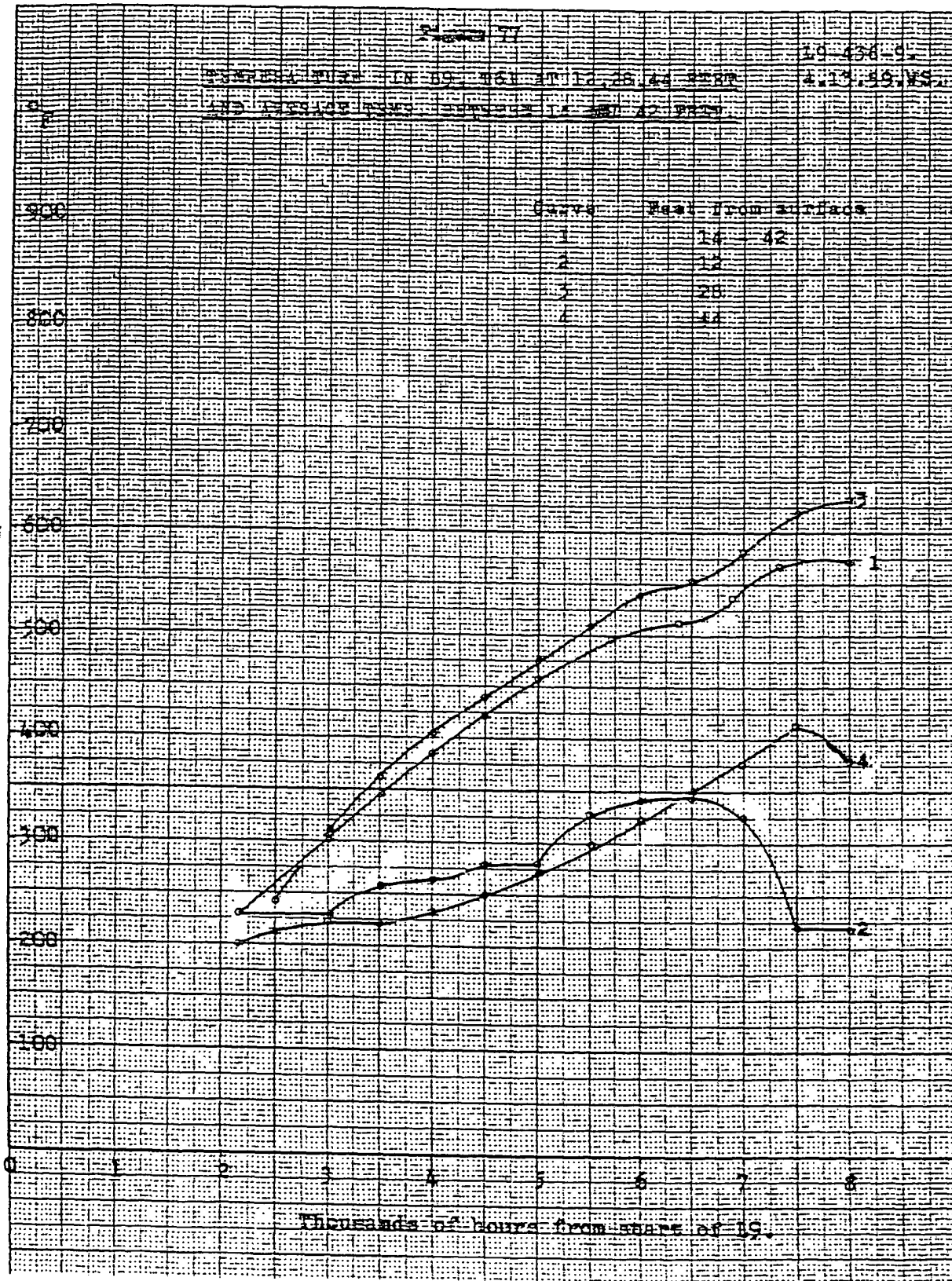


Figure 70

15-38-10.

11-17-59, 79.

TEMPERATURE BY LG. 7562 AT 12, 20, 44, 82 FEET

AND AVERAGE TEMP. BETWEEN 14 AND 42 FEET.



Figure 79

19-436-17

4.1.55.78.

TEMPERATURE IN °C. AT 12, 28, 44, 72, 88

AND AVERAGE TEM. DURING 12 AND 42 DAYS

Curve	Feet from surface
1	12
2	15
3	28
4	44



Thousands of hours from start of 10.

Figure 80

19-426-12
1.17.59.W5.

TEMPERATURE IN 19, 760, 17, 28, 34 FEET
AND AVERAGE TEMP. BETWEEN 14 AND 42 FEET

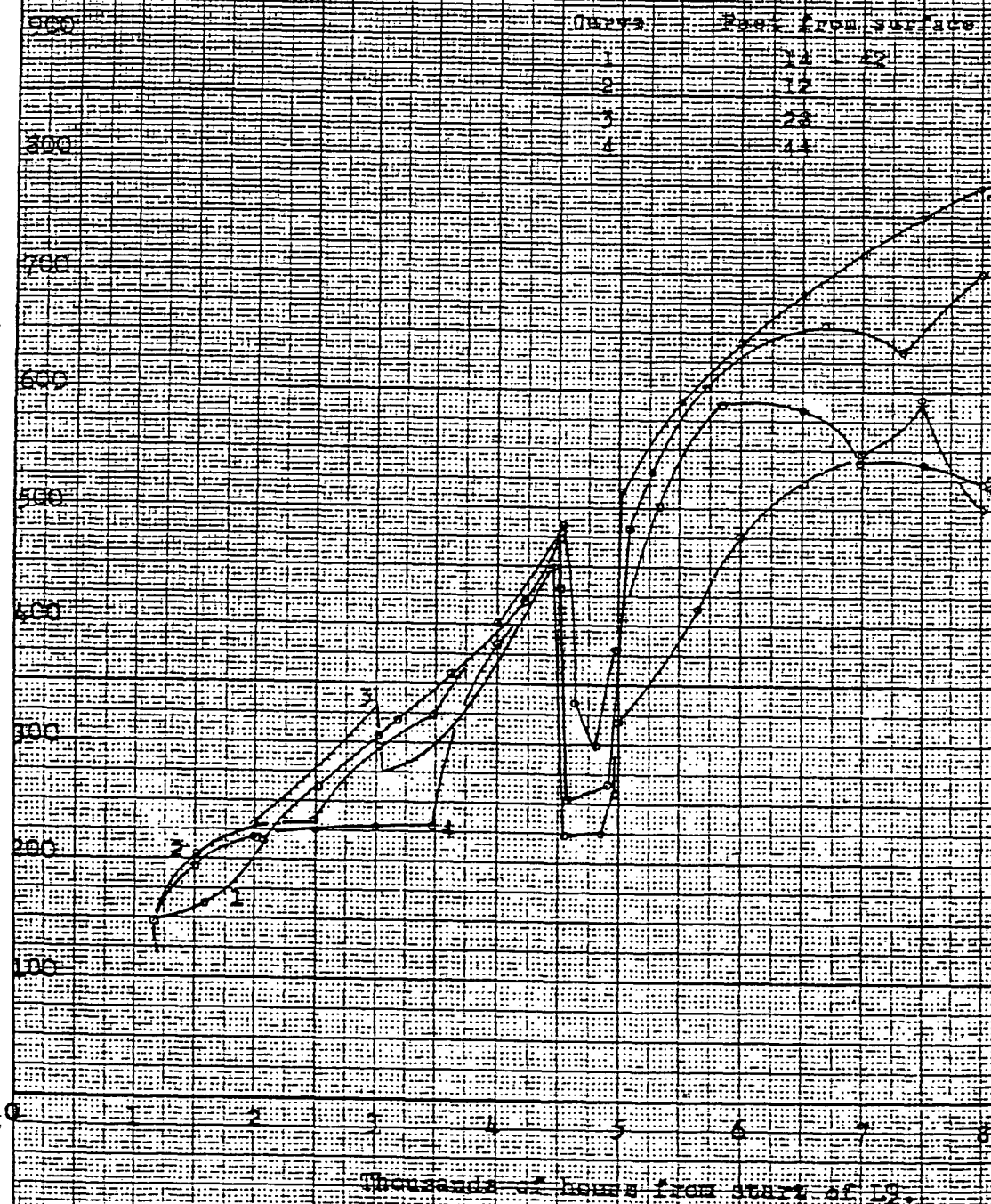


Figure 21

1960-6-12
4.19.18.23

TEMPERATURE IN 12, 20, 28, 44 FEET
AND AVERAGE TEMP. BETWEEN 12 AND 42 FEET.

	Line	Feet from surface
900	1	12 - 42
	2	12
	3	28
800	4	44

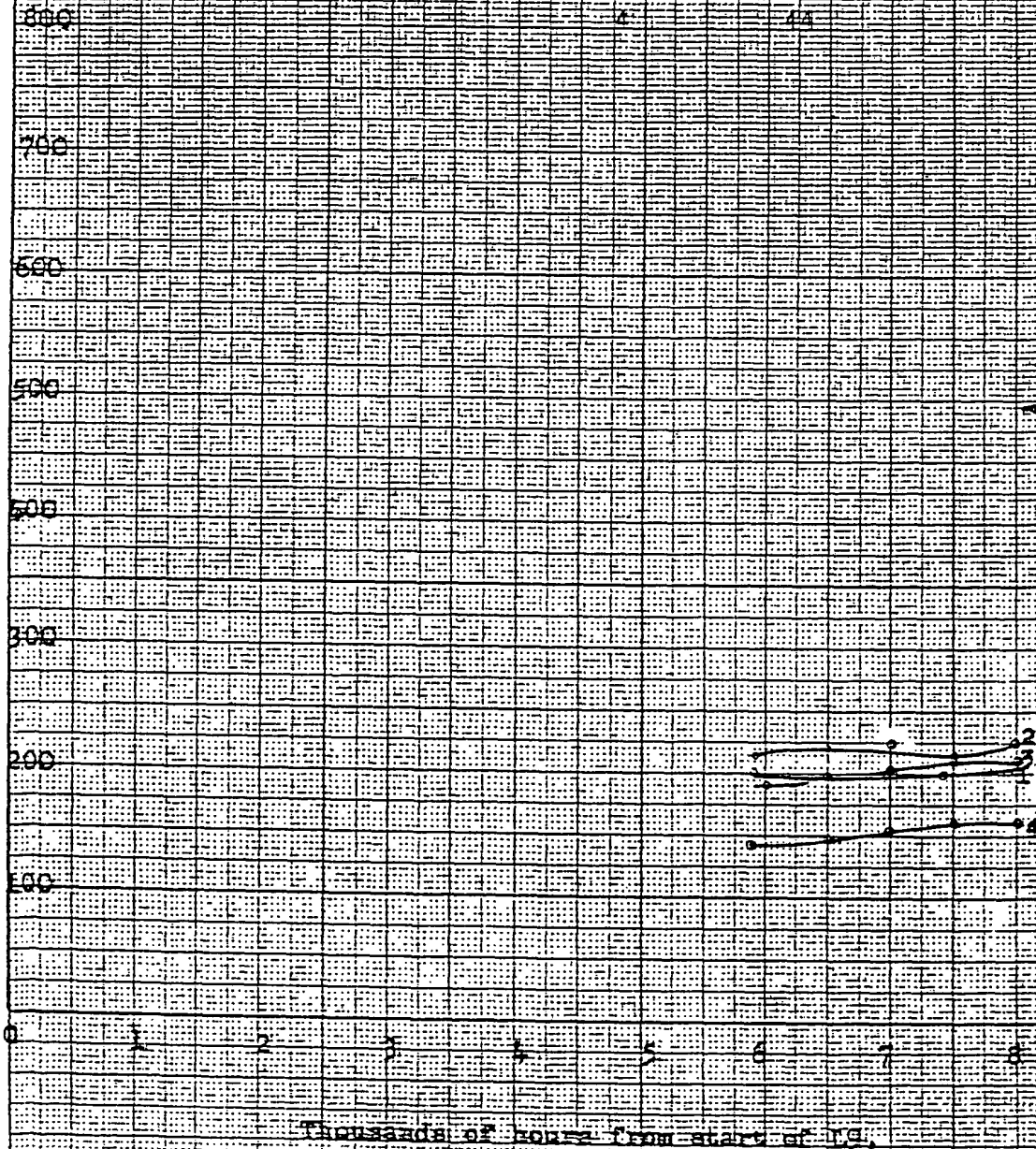


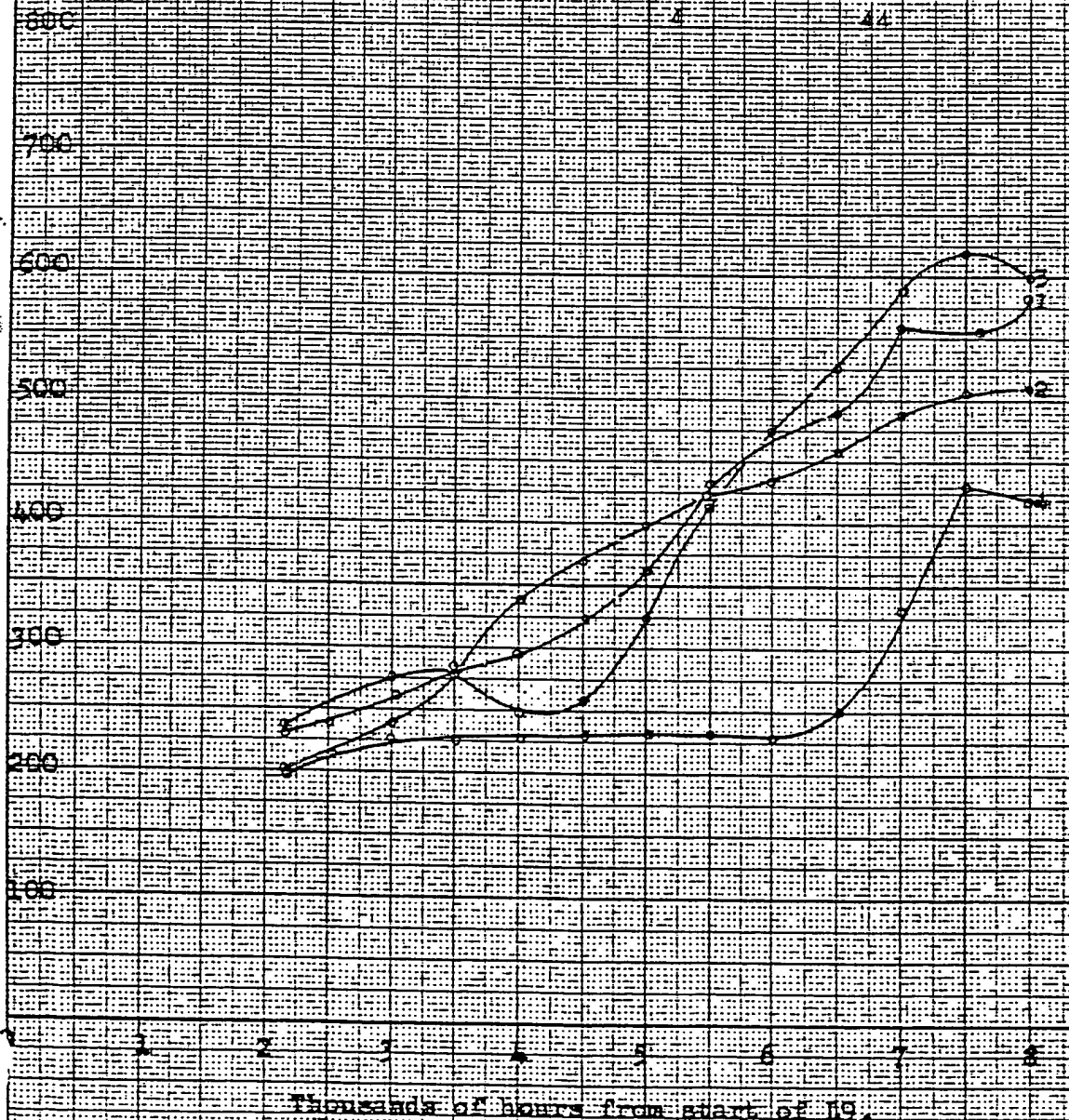
Figure 20

29-476-14.

4.13.65 WS.

TEMPERATURE IN 19. 47601. AT 12.25.44 PM
AND AVERAGE TEMP. BETWEEN 14 AND 42 FPM

Curve	Feet from surface
1	14 - 42
2	12
3	28
4	44



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MILLIMETER

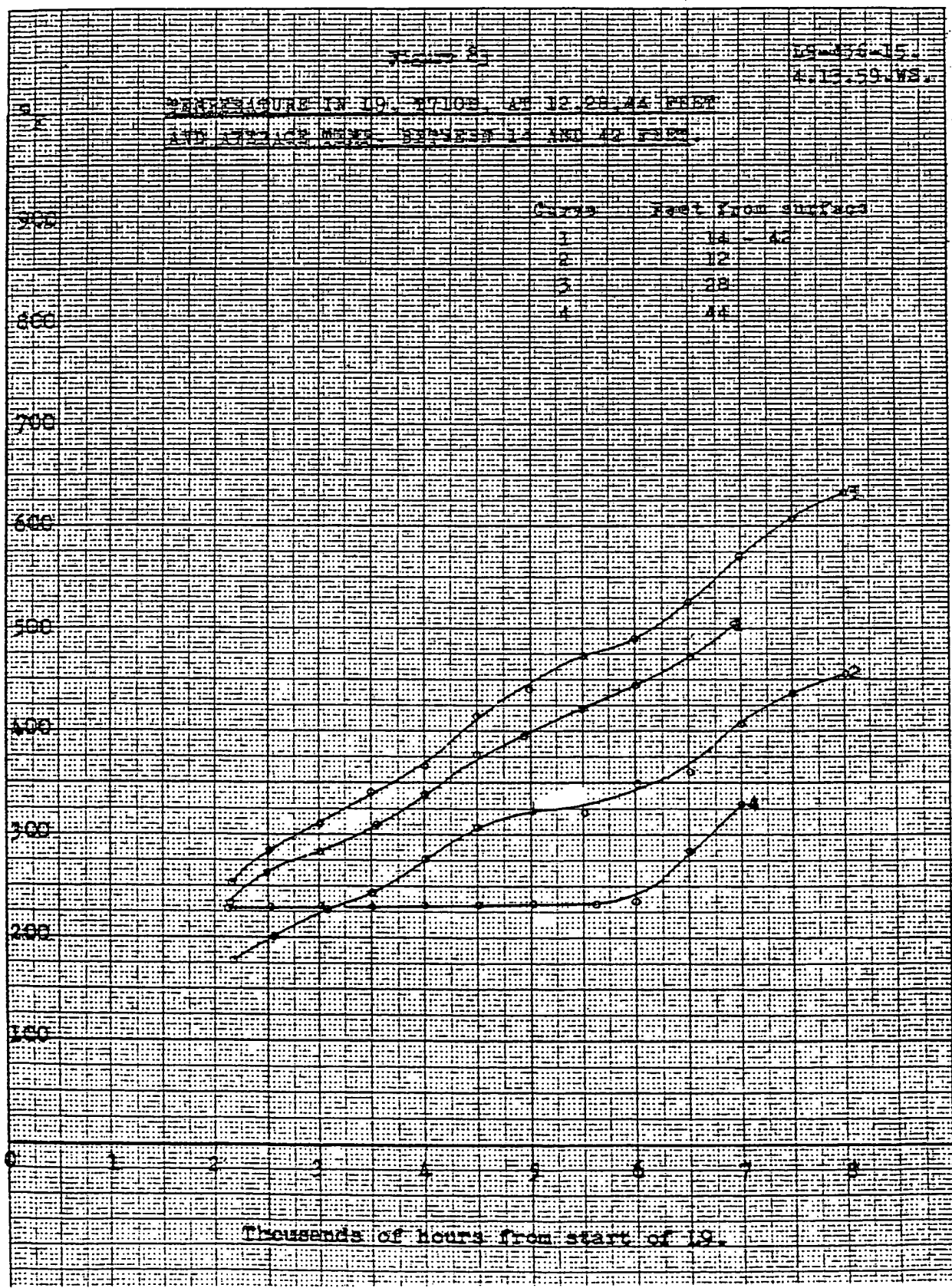
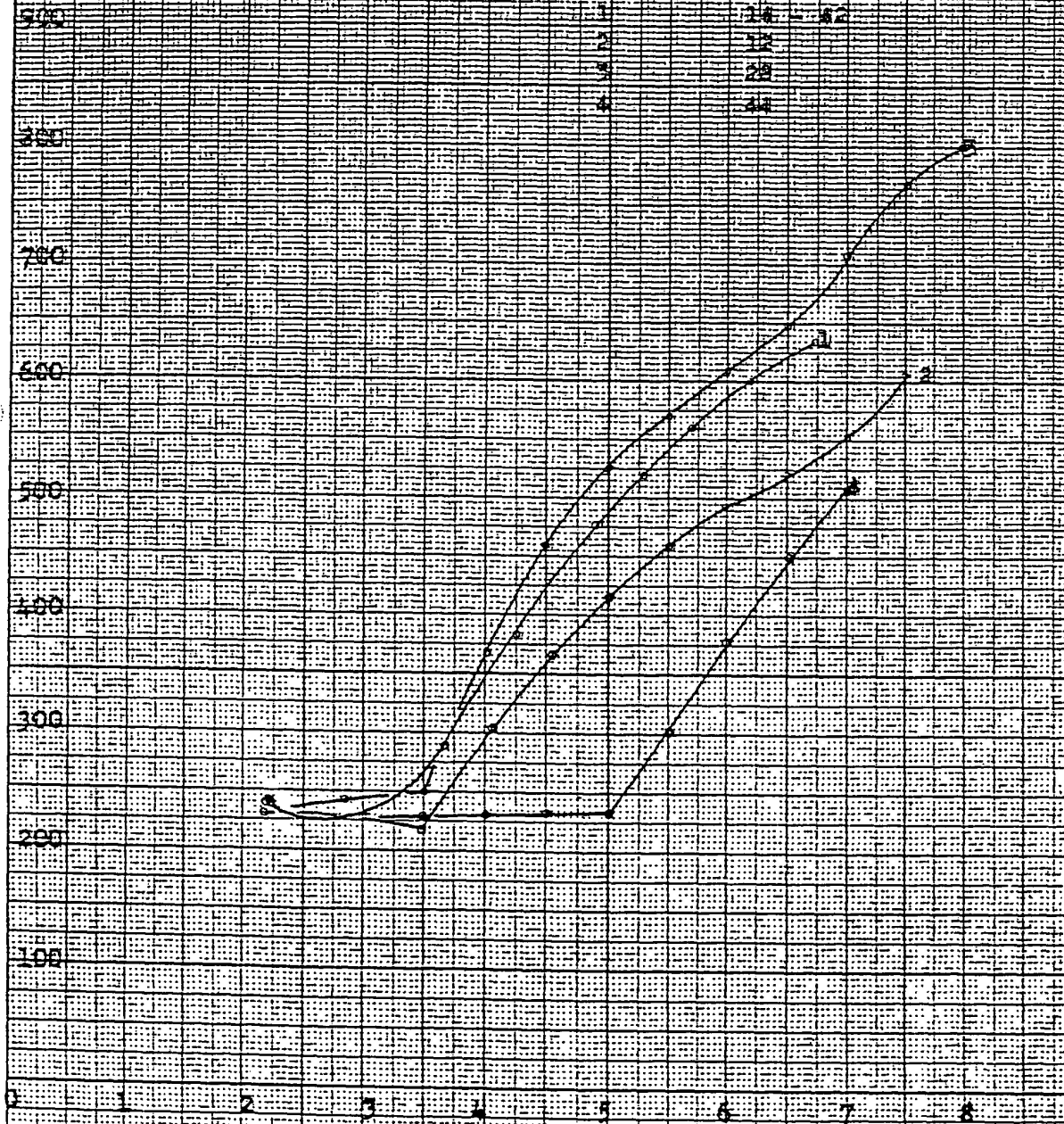


Figure 28

89-438-JF.
4.13.59.MS.

TEMPERATURE IN °F. 19, 25, 31, 38, 44 FEET
AND AVERAGE TEMP. BETWEEN 14 AND 42 FEET.

Curve	Feet from surface
1	14 - 42
2	12
3	28
4	44



Thousands of hours from start of 19.

Fig. 25

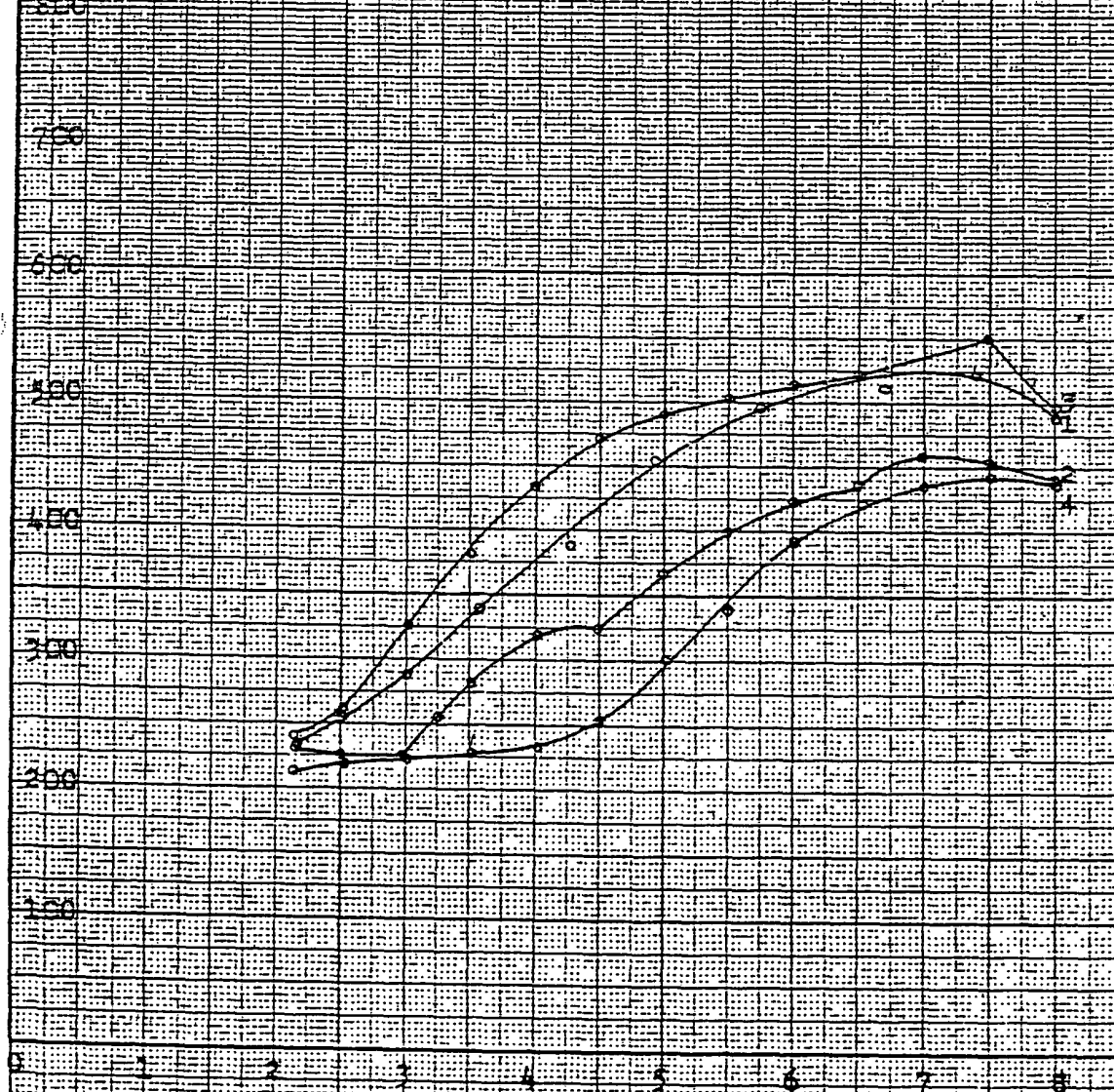
90-436-18.

17.59.59.

TEMPERATURE IN 19, 2102, 42, 12, 28, 44 FEET

AND AVERAGE TEMP. DEPTHS 14, 17, 20 FEET

Curve	Feet from surface
1	14-15
2	17
3	20
4	28



Thousands of hours from start of 19.

Figure 87

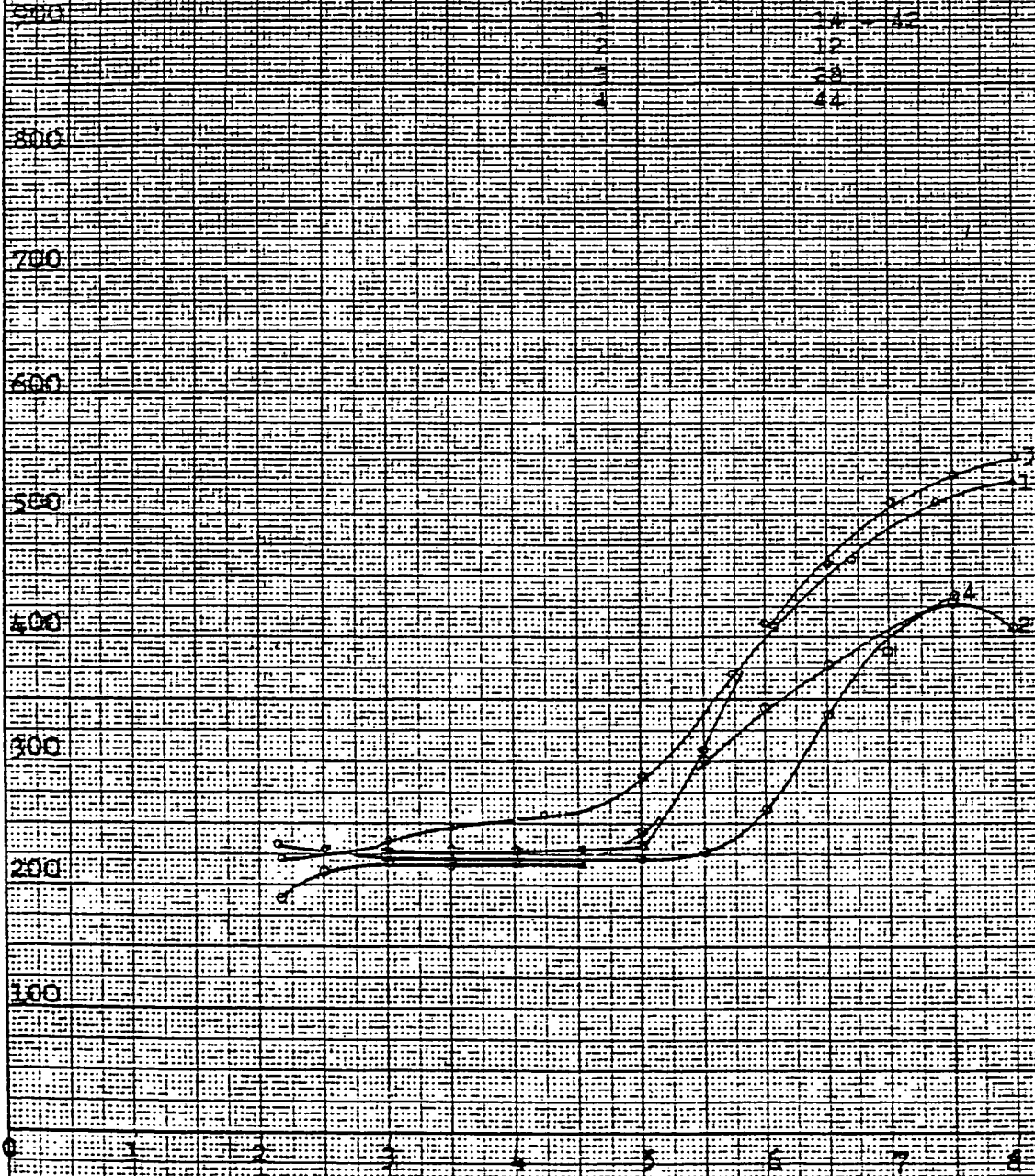
19-438-39.

4.2.59.73.

SEA-CHANGING IN 19. 1103. AT 12.28.44. FROM

120. AVERAGE TEMP. 15.17.44. AT 12.28.44.

Curve	Feet from surface
1	14
2	12
3	28
4	44



Thousands of hours from start of 59.

19-444
5-22-59 EP

Figure 88

AVERAGE TEMPERATURE AT 26 FEET AND 14 TO
42 FEET IN "REACTOR" TEMPERATURE WELLS
(W2, W1, W3, W4, W5, W6, W7, W8)

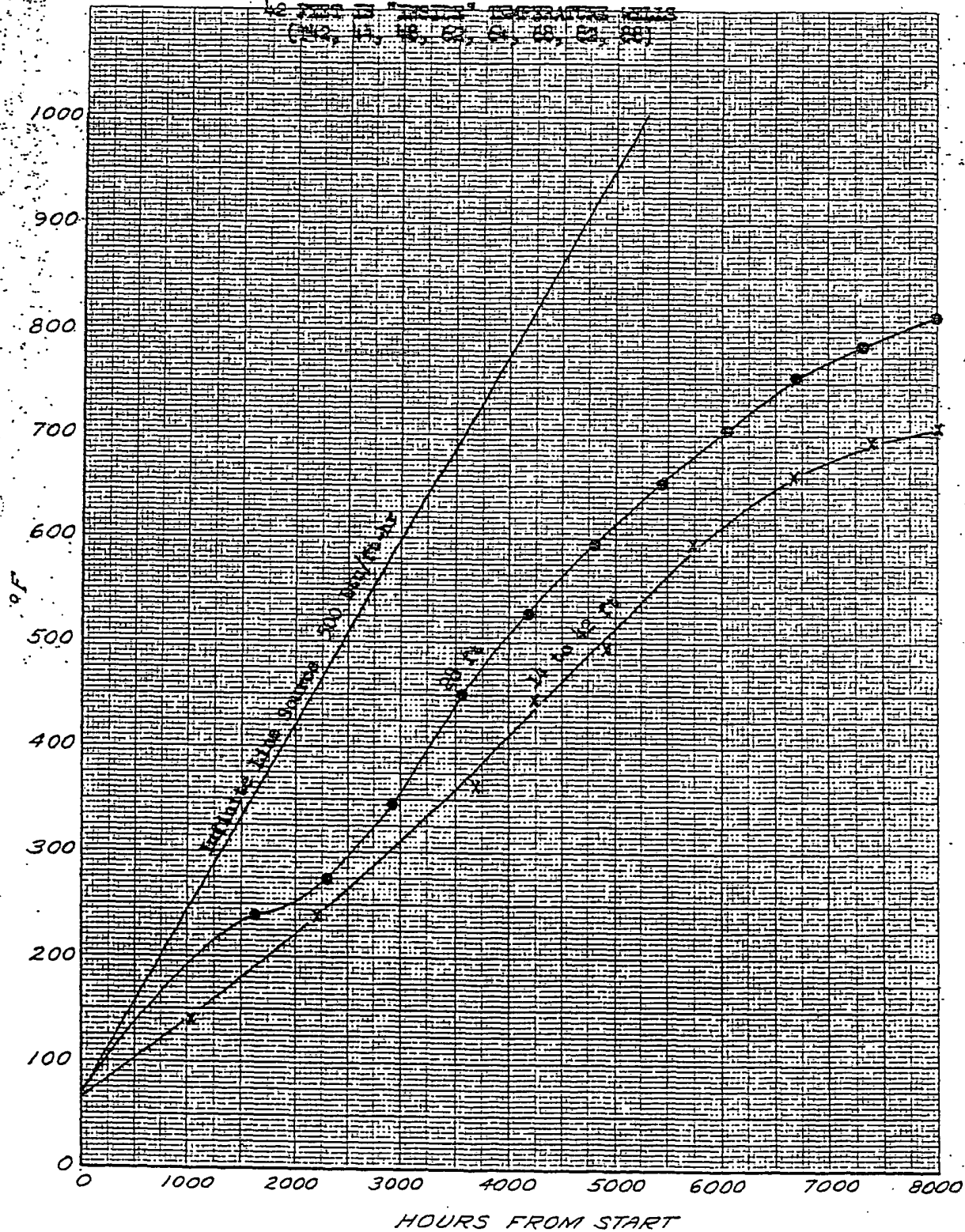


Figure 80

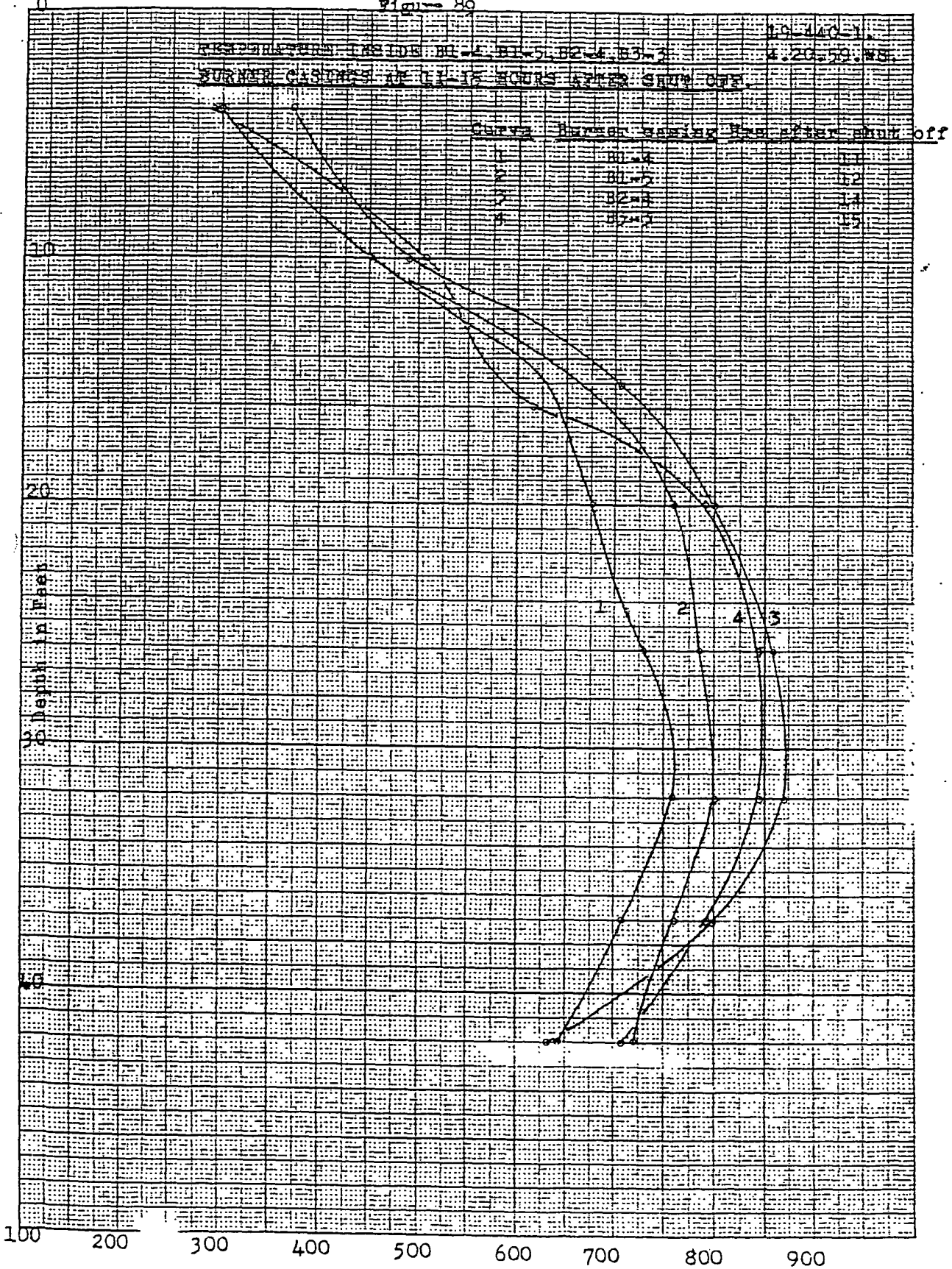


Figure 20

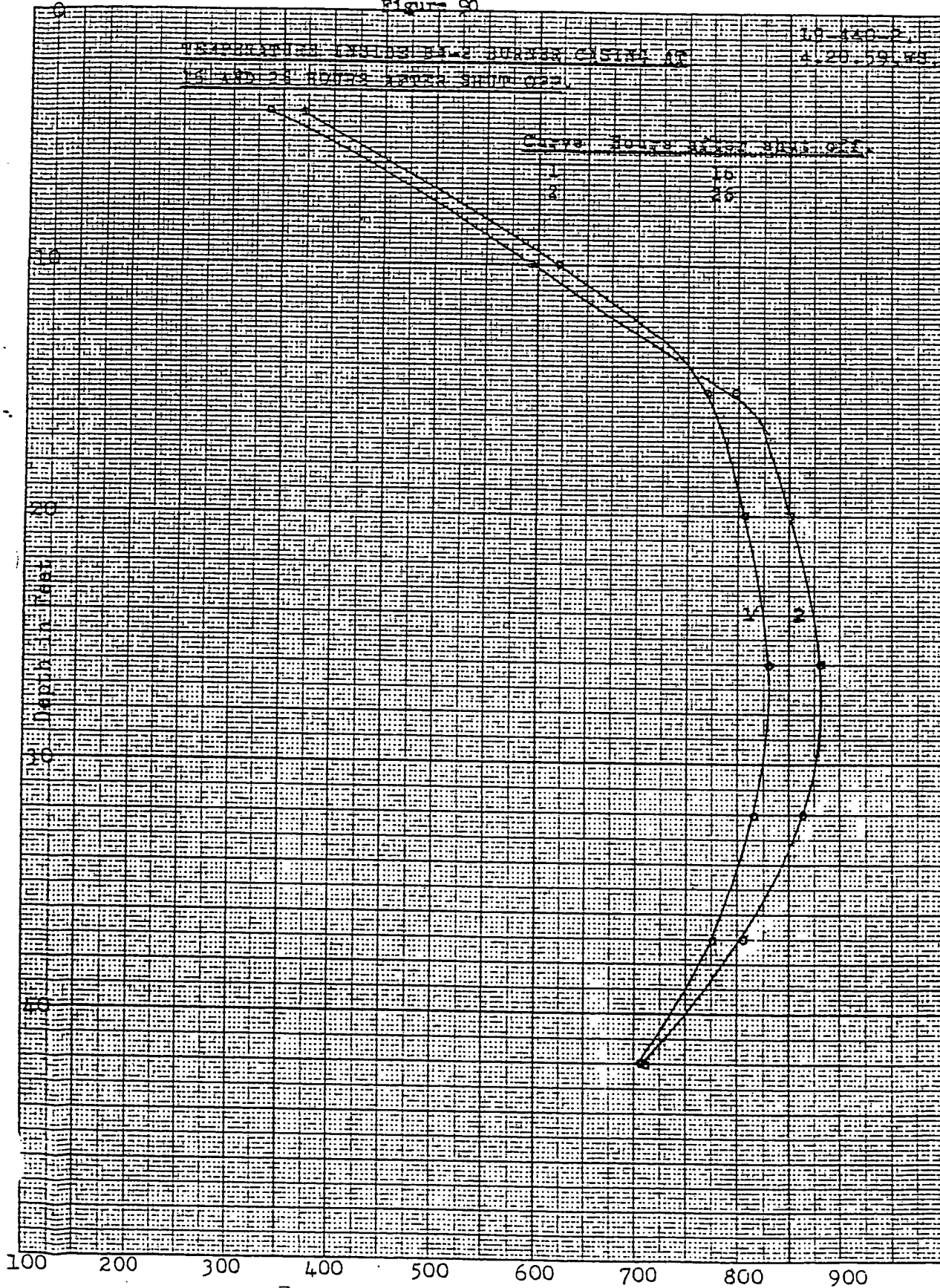


Figure 91

59147013
1.20.79.48

TEMPERATURE LOGS OF 24-5 BUREAU OF OCEANOGRAPHY
17 AND 28 HOURS AFTER SHUT-DOWN

17 28
28

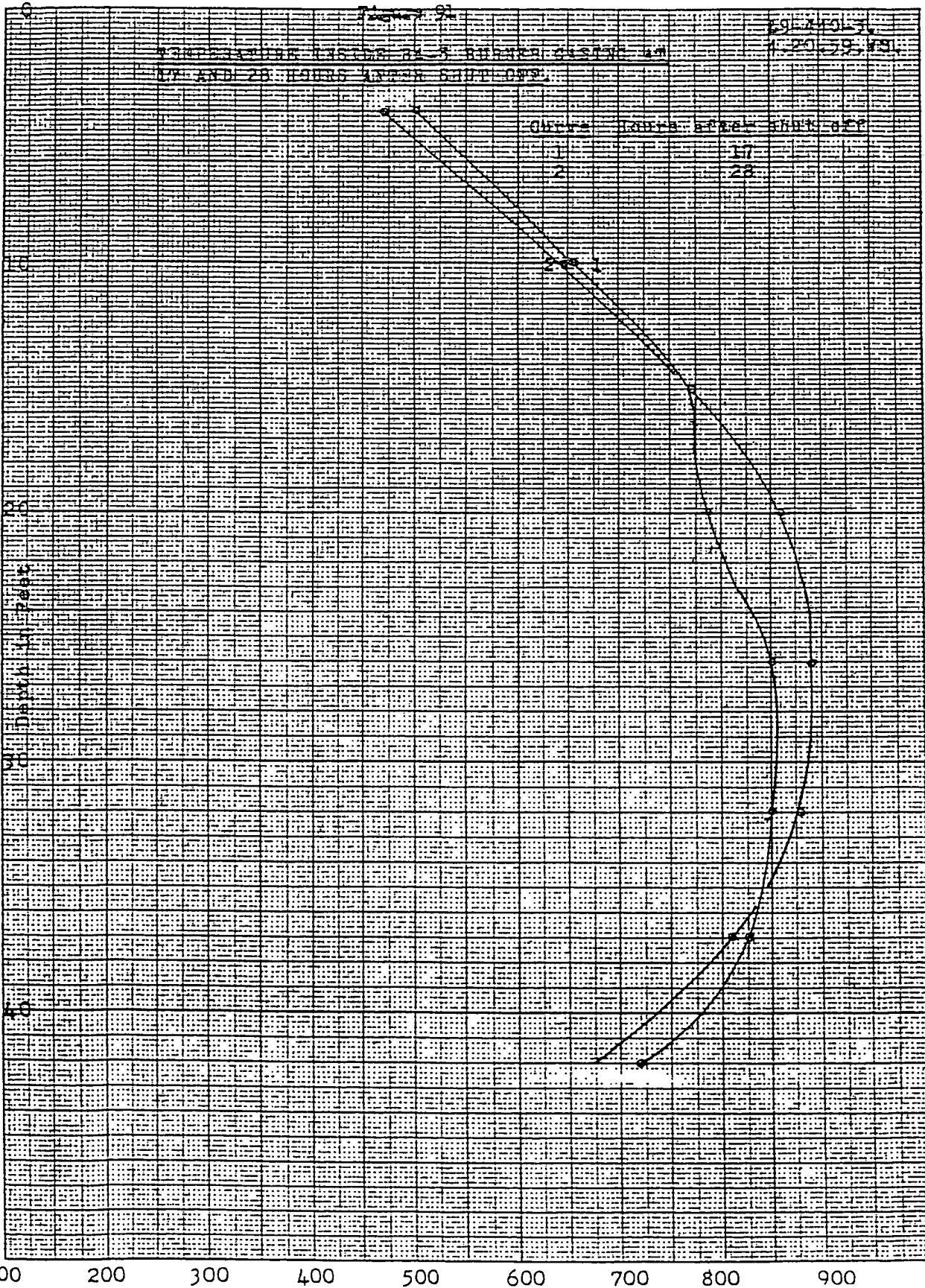


Figure 92

WATER SURFACE ELEVATION OF 6' FLUMINAR GASTEC
AT 19 AND 29 HOURS AFTER SHOT OFF.

19-00-00
2-20-59-03

19-00-00 29-00-00

19

29

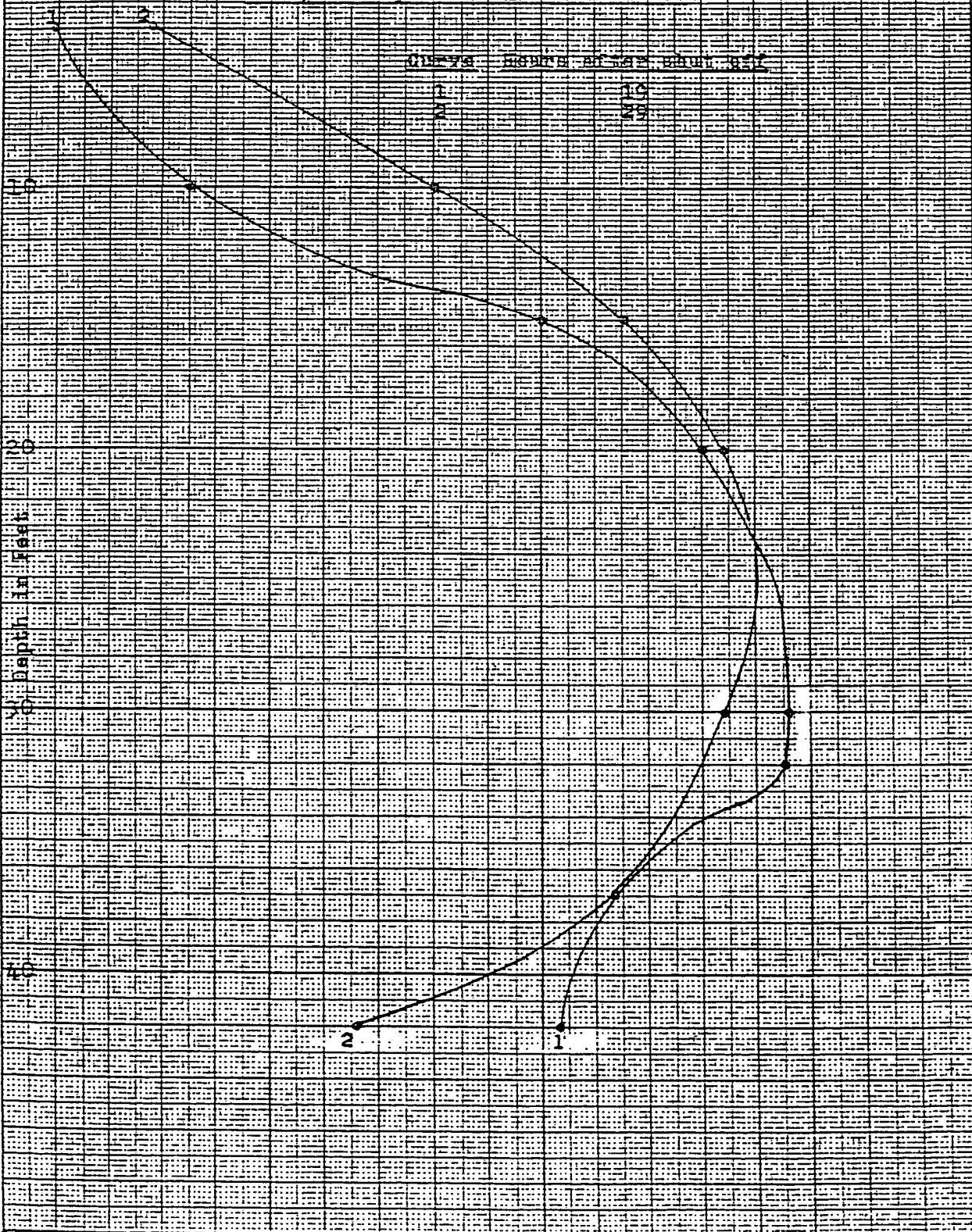


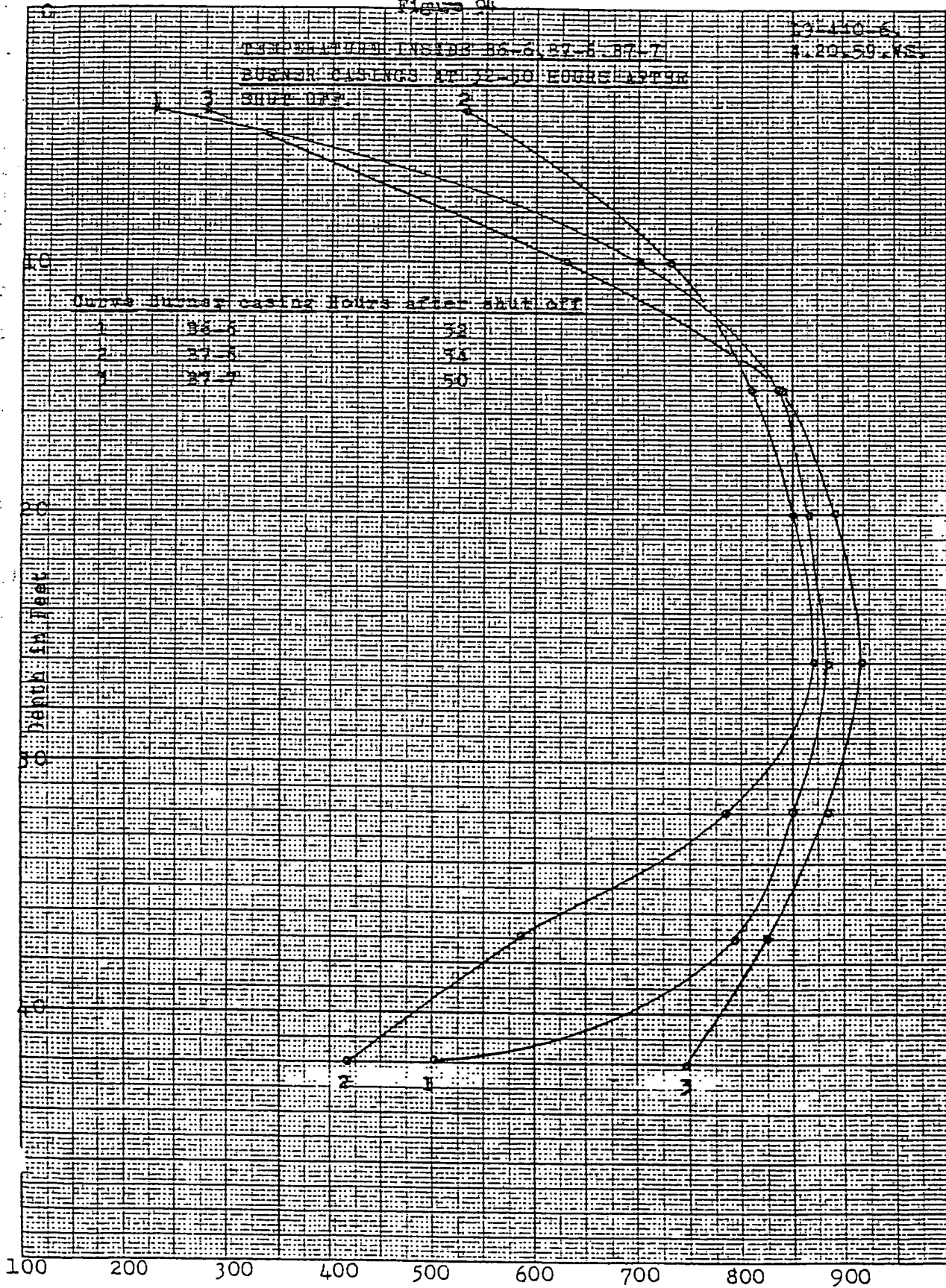
Figure 94

TEMPERATURE INSIDE B6-6, B7-6, B7-7,
BURNER CASINGS AT 12-00 EIGHT AFTER
SHUT OFF

30-450-6
#120-50-KS.

Curve burner casing hours after shut off

1	36.4	32
2	27.8	36
3	27.7	50



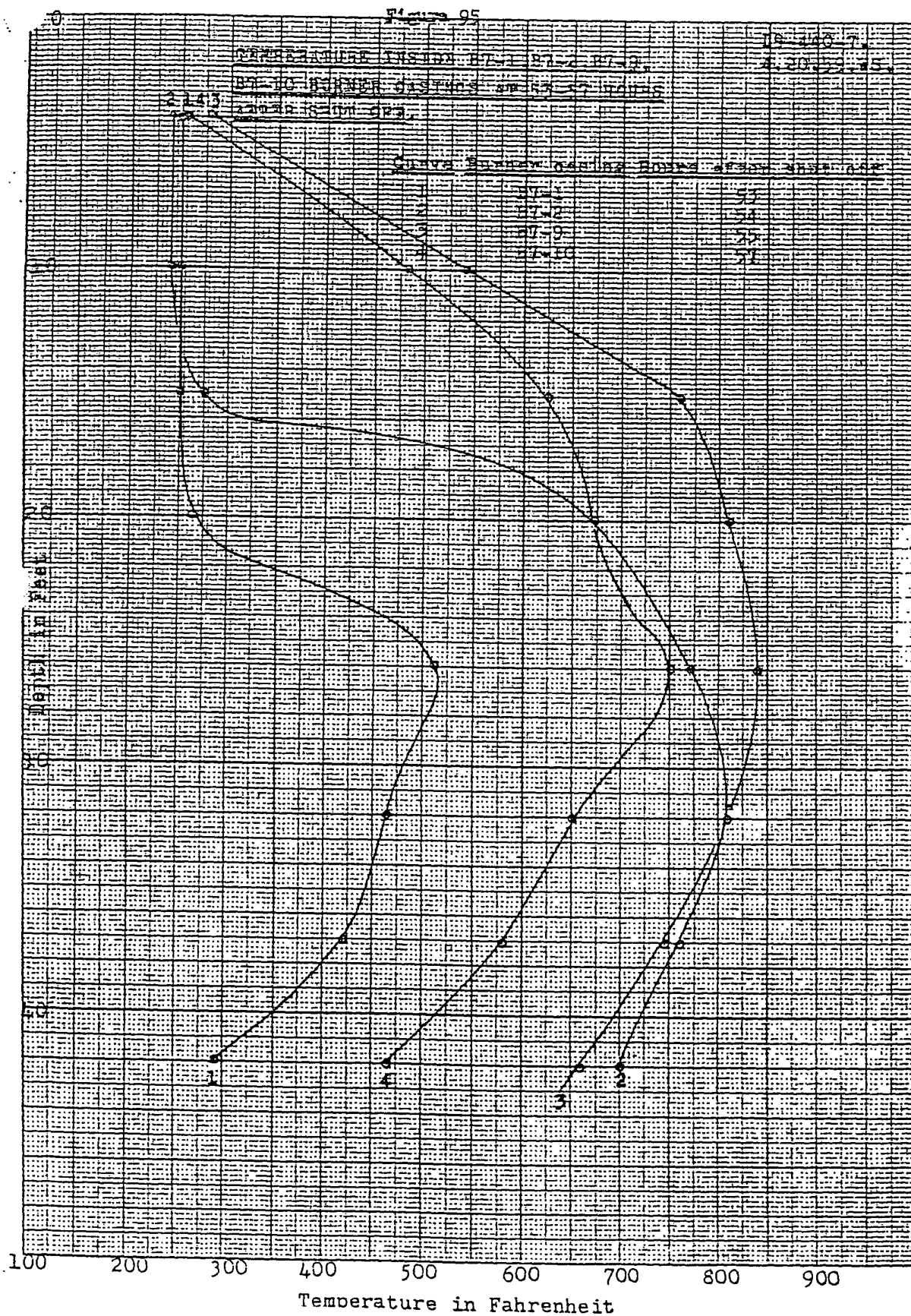


Figure 56

STATIONARY CASES FOR 19-5 BROWN 810-4
 170000 DISTANCE AT 50-20 170000 170000
 170000 170000

19-440-3
 170000 170000

STATIONARY CASES FOR 19-5 BROWN 810-4		
1	810-4	58
2	810-4	70
3	810-4	78

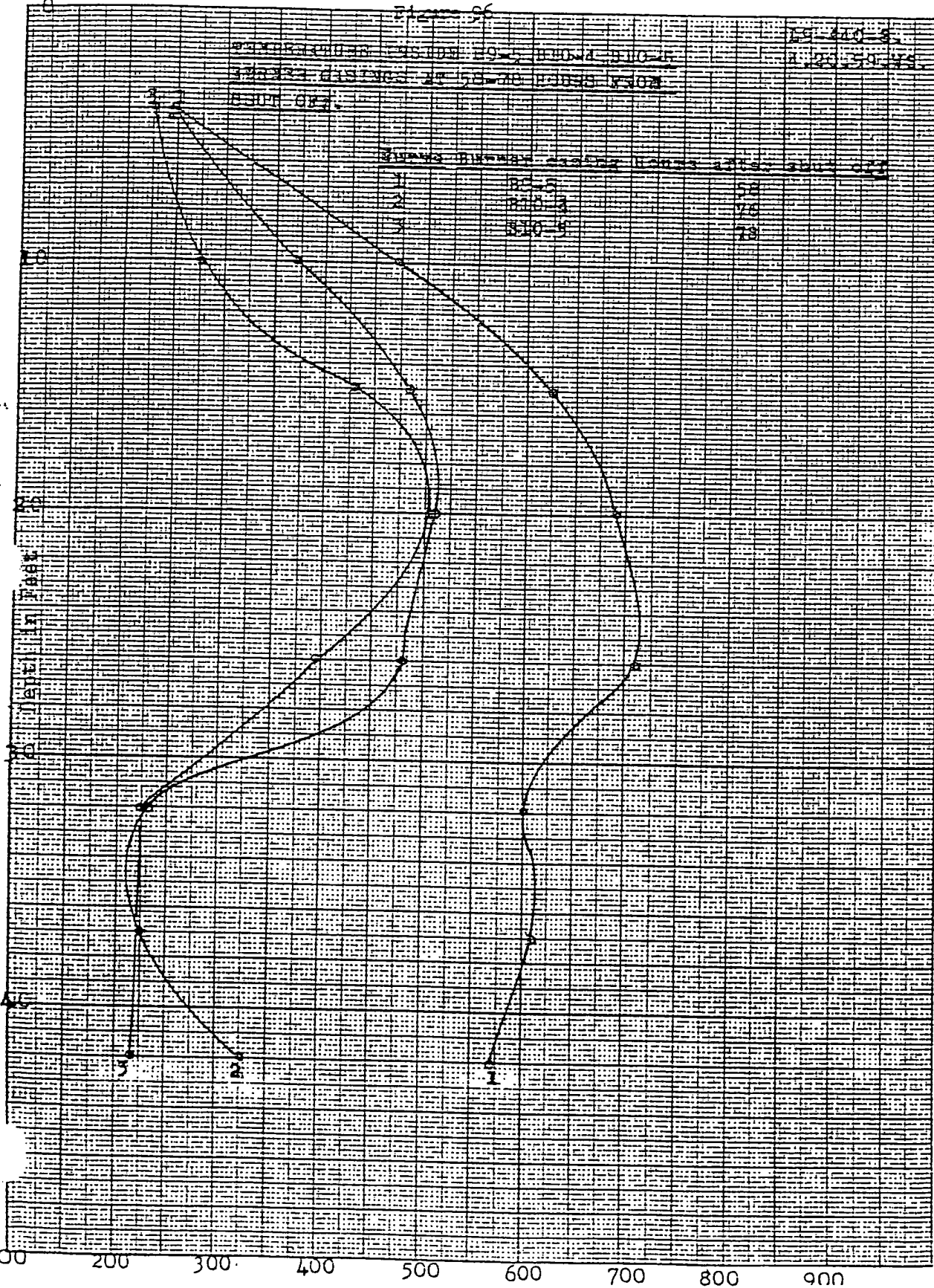
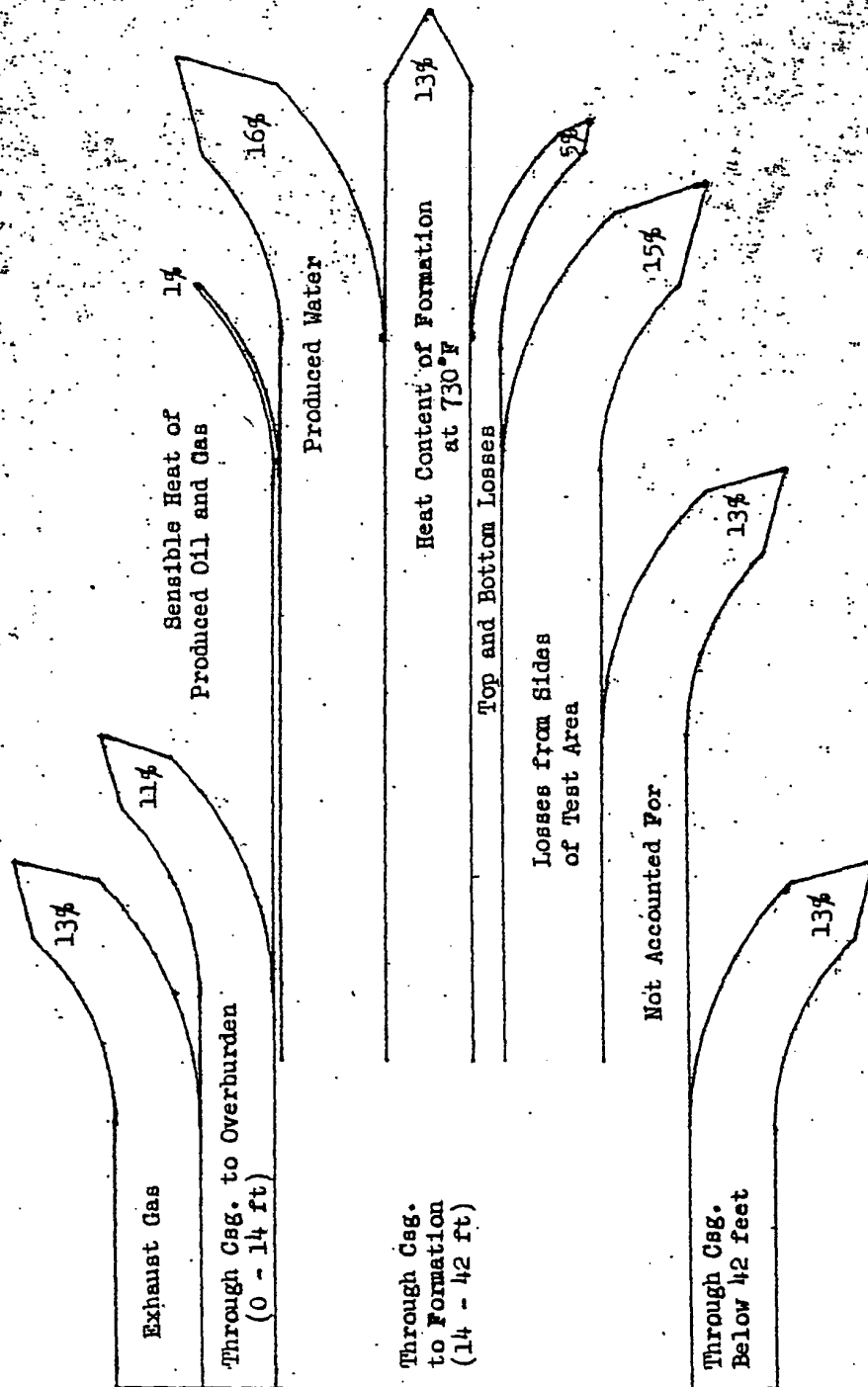


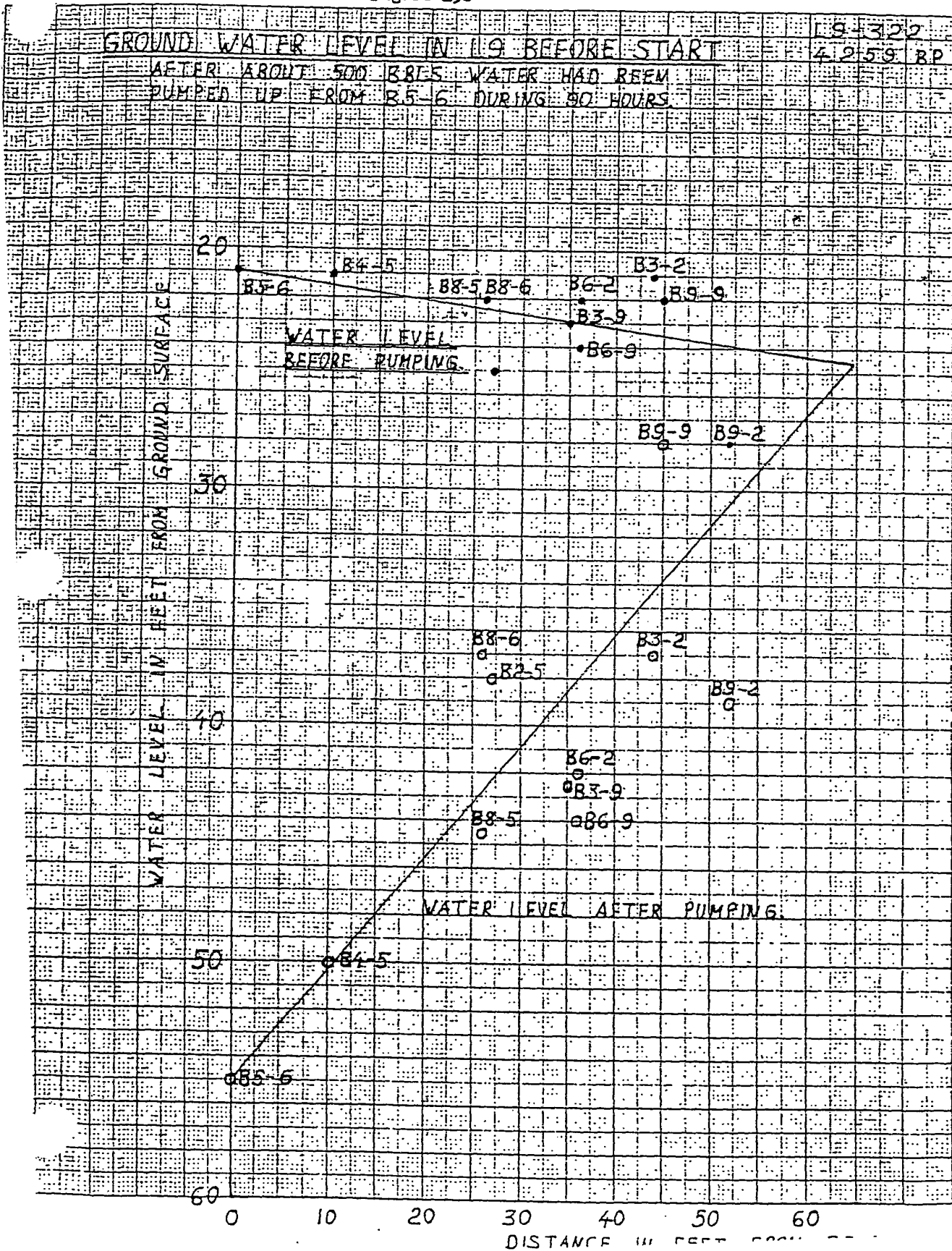
Figure 97

19 HEAT BALANCE



Total Heat Input (100%)

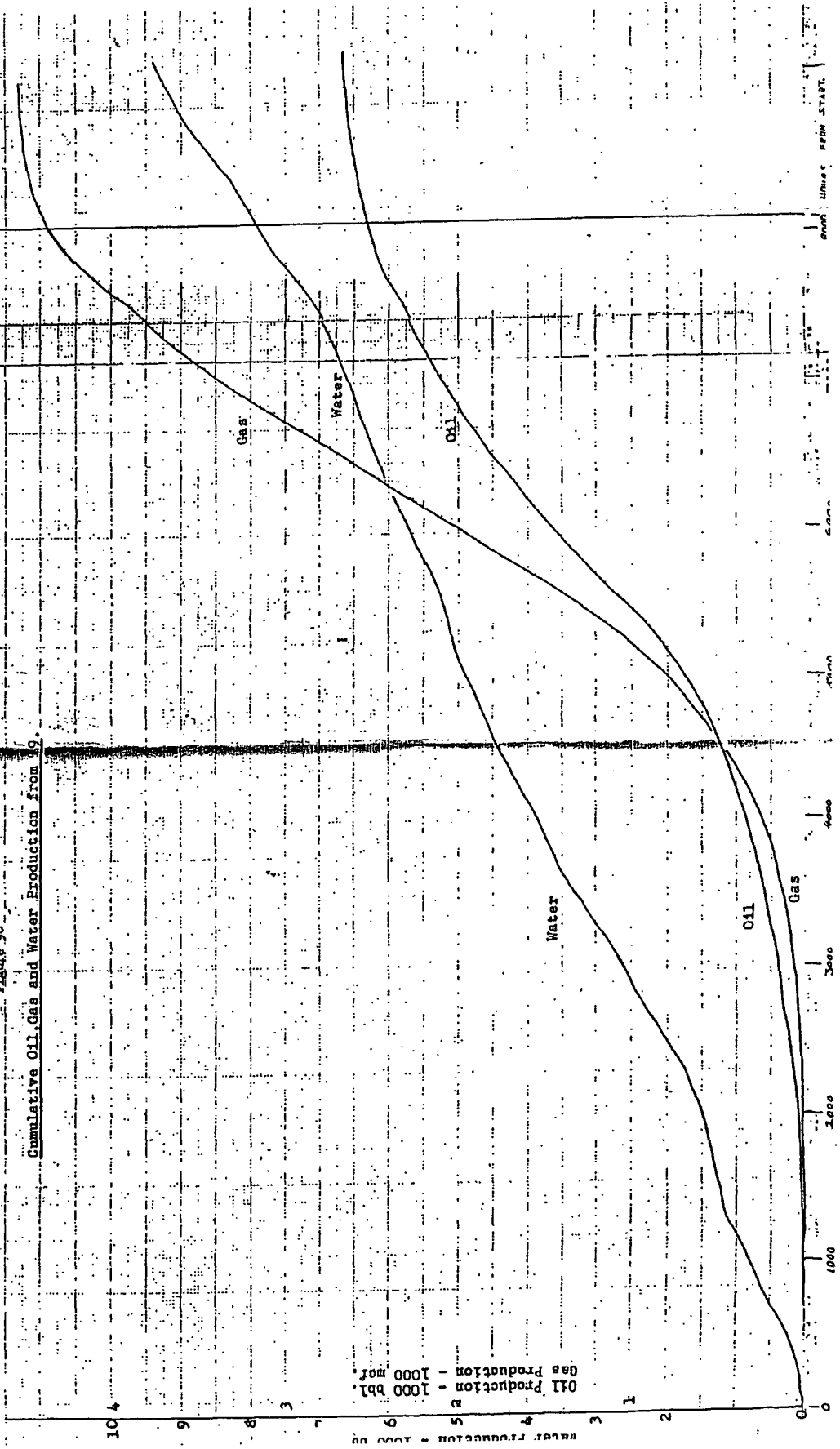
Figure 156



19-319
3-25-59.BP

Figure 98

Cumulative Oil, Gas and Water Production from 9



Oil Production - 1000 bbl.
Gas Production - 1000 mcf.

FEBRUARY 5 10 15 20 25 MARCH 5 10 15 20 25 APRIL 5 10 15 20 25 MAY 5 10 15 20 25 JUNE 5 10 15 20 25 JULY 5 10 15 20 25

Figure 99

Daily 19 Production
(2 days average)

Bbls of oil or water per day
1000 cu. ft. gas per day.

40

30

20

10

0

Water

0 1000 2000 3000

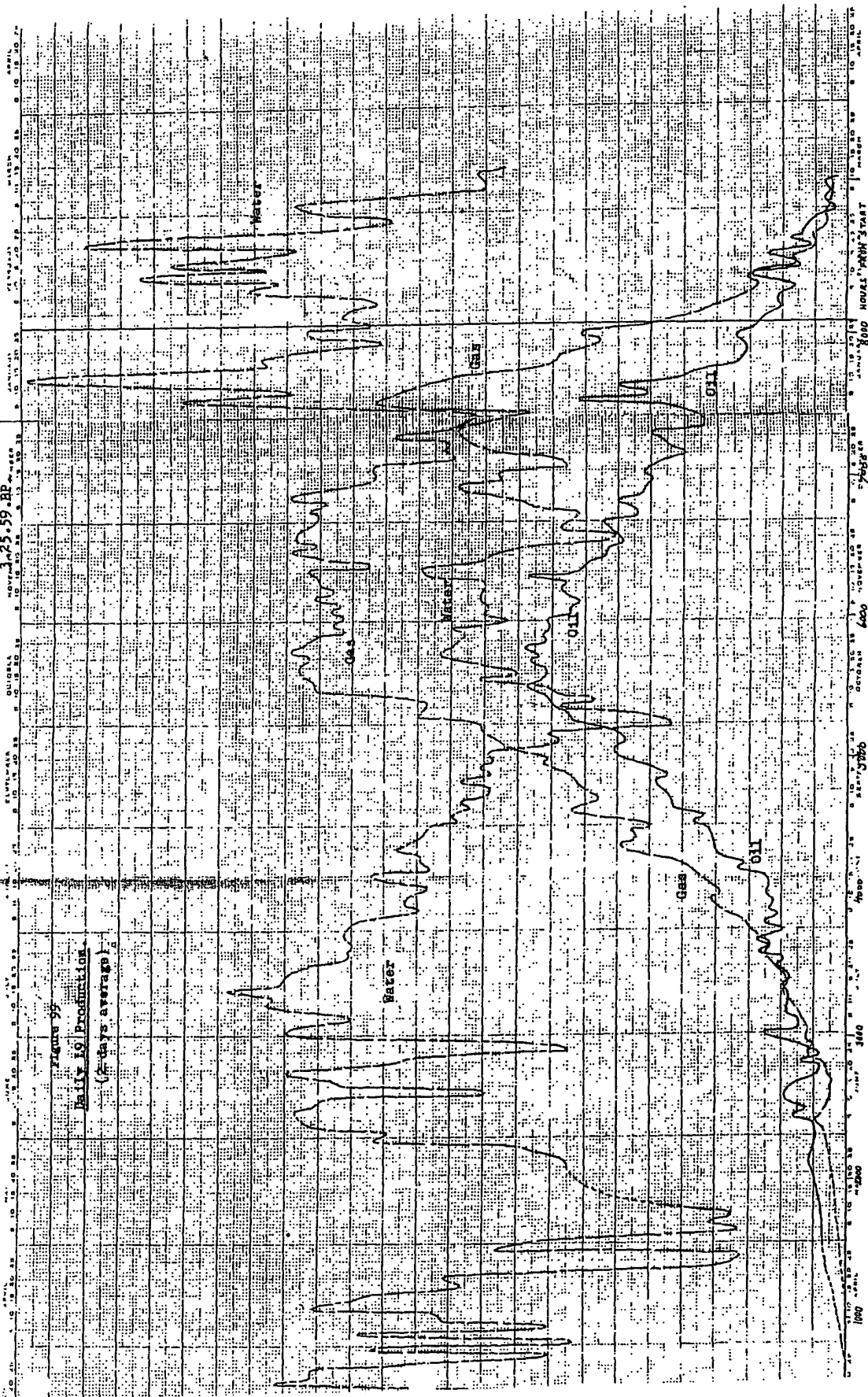
Figure 59
Daily Production
(2 days average)

1000
800
600
400
200
0

WATER
GAS
OIL

JAN 1 1940
FEB 1 1940
MAR 1 1940
APR 1 1940
MAY 1 1940
JUN 1 1940
JUL 1 1940
AUG 1 1940
SEP 1 1940
OCT 1 1940
NOV 1 1940
DEC 1 1940
JAN 1 1941
FEB 1 1941
MAR 1 1941
APR 1 1941

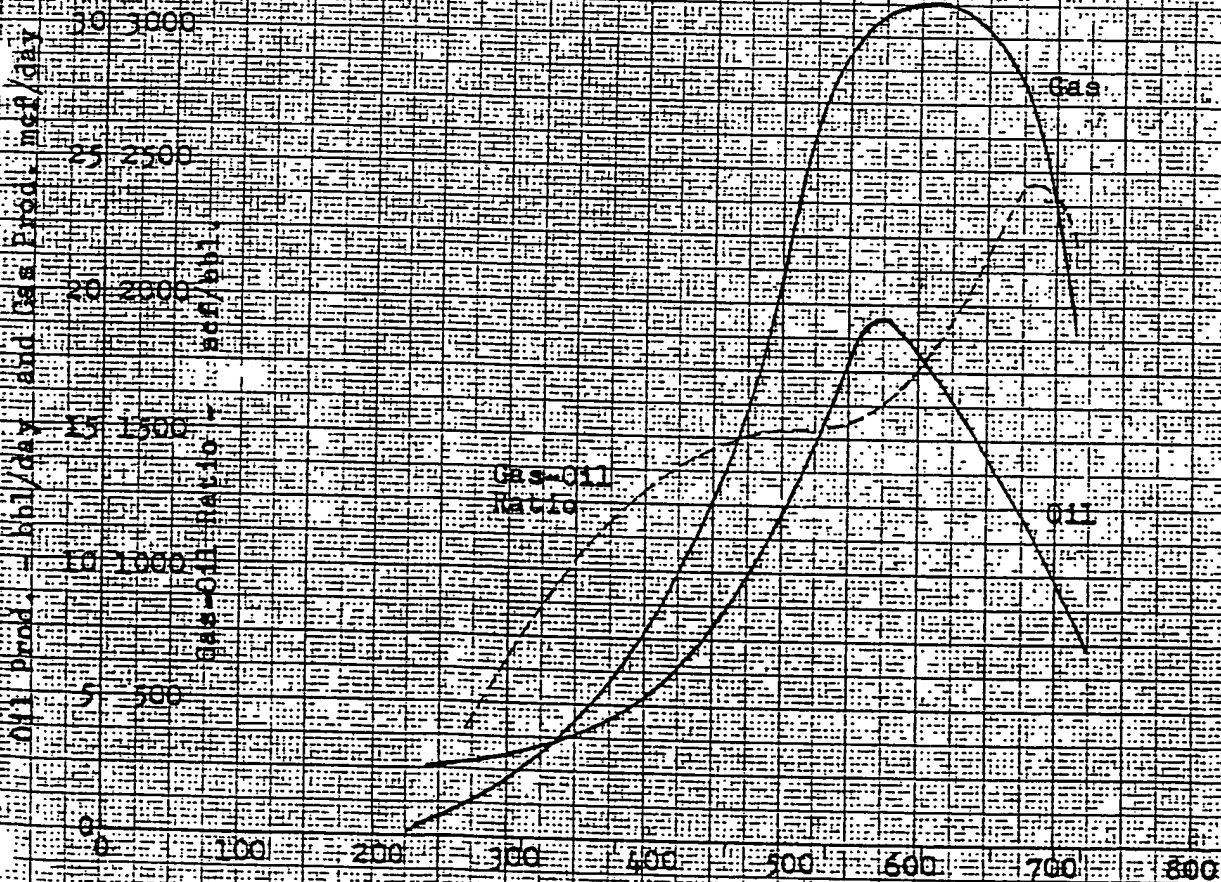
Figure 99
Daily L9 Production
(2 days average)



L9-705
5-16-59 RH

Figure 100

L9 PRODUCTION RATES VS. FORMATION TEMPERATURES



Average Temperature from L4 to L2 feet, Midway betwe n burners - 2r.

19-318
3-25-59 BP

Figure 101

Gas/Oil and Water/Oil Ratios of 19 Production

(Weekly Average)

Gas/Oil Ratio - scf/bbl
Water/Oil Ratio - bbl/bbl

Gas/Oil Ratio

Water/Oil Ratio

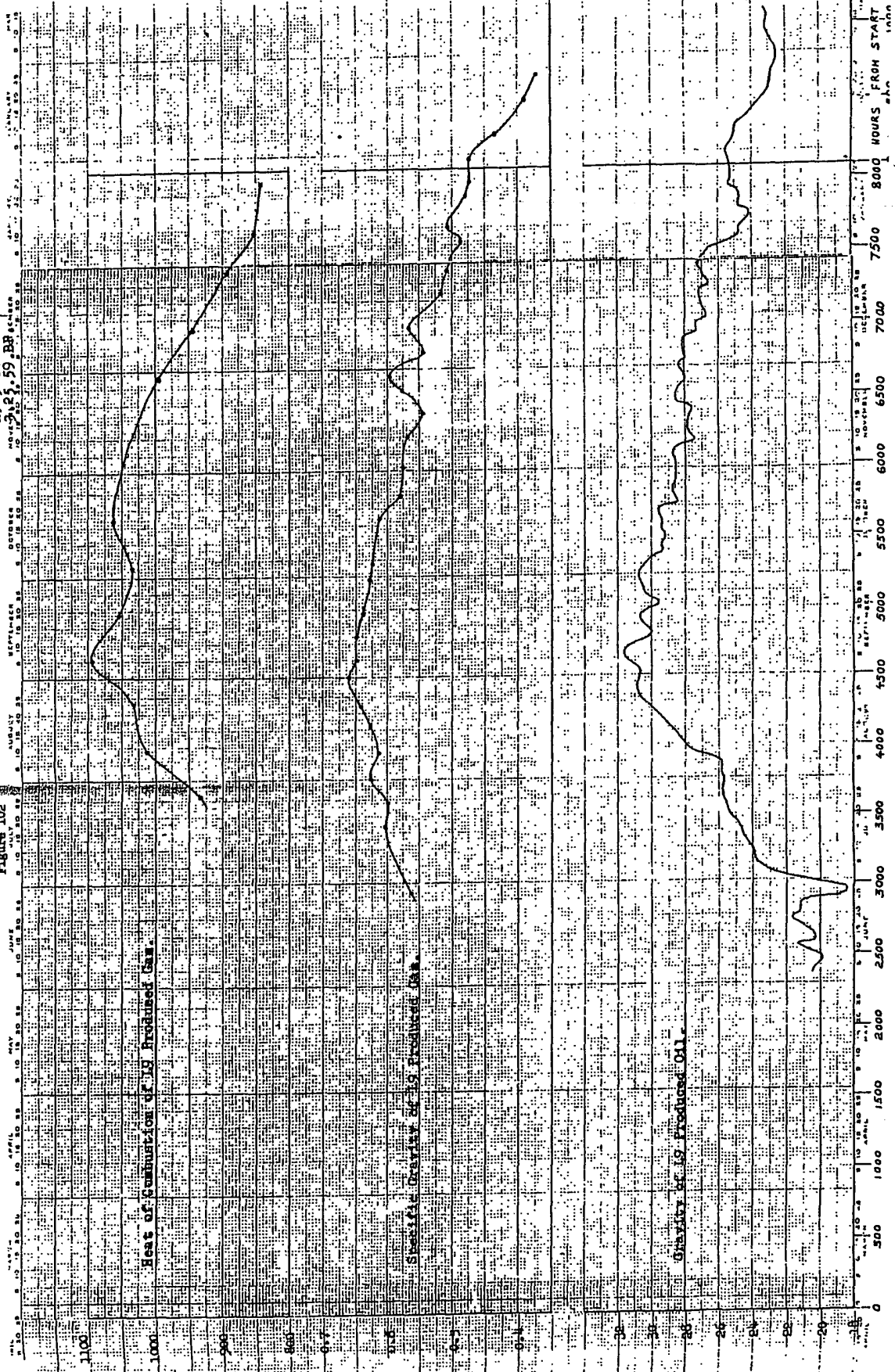
GOOD HOURS FROM START

Figure 102

19-506

NOV 21 22 59 BR

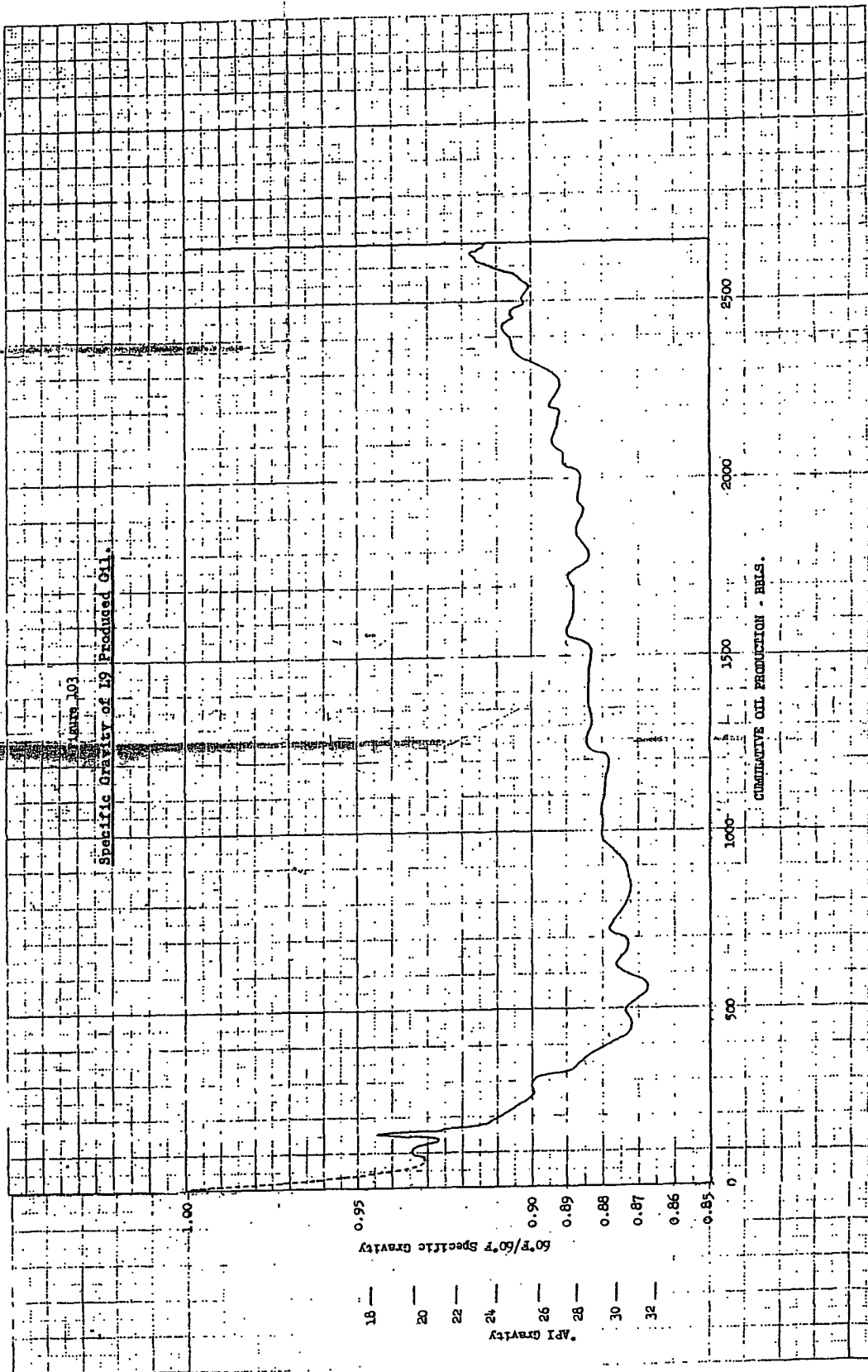
1950



19-507
3.25.59 BP

WELL 103

Specific Gravity of L9 Produced Oil

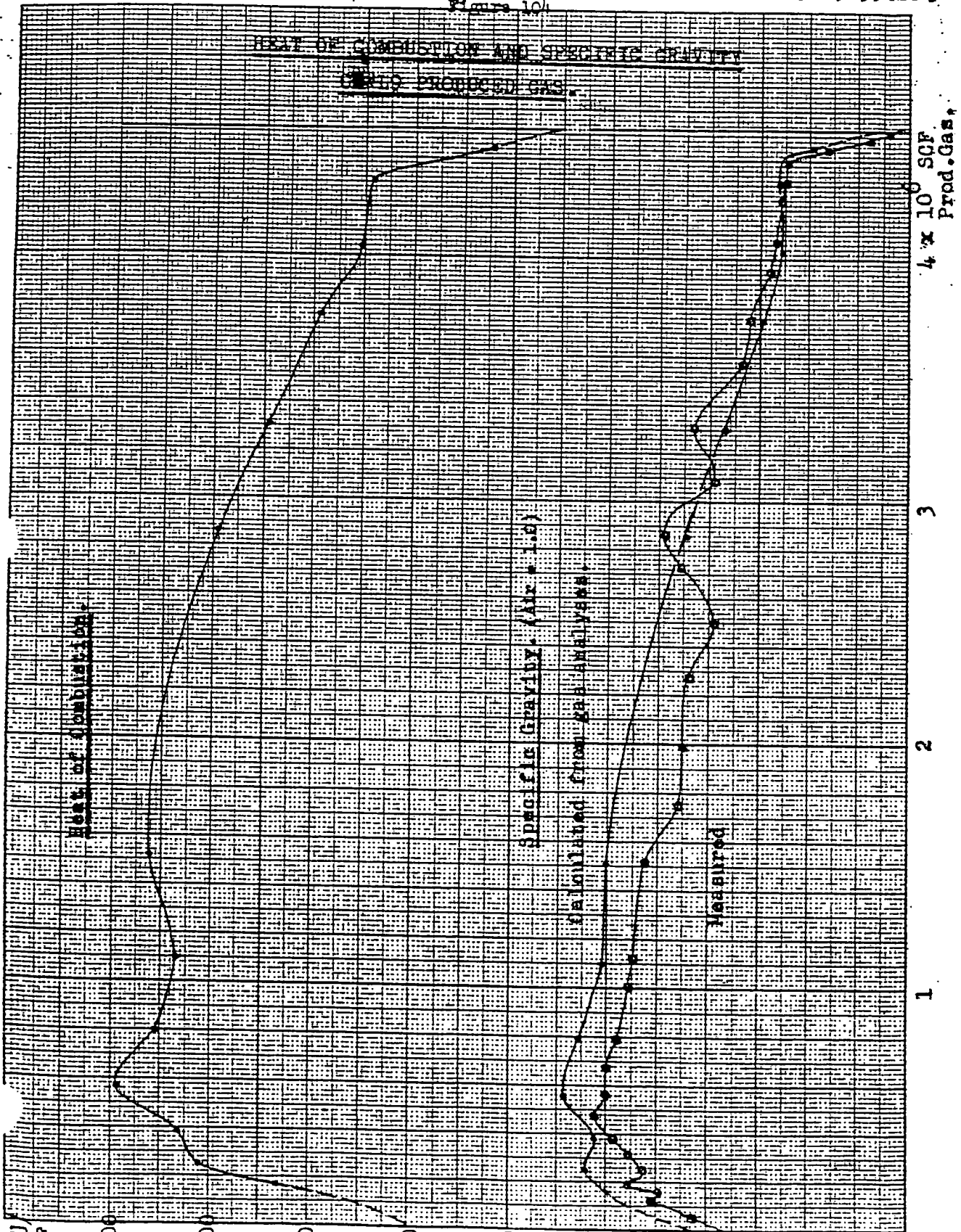


API Gravity

18 —
20 —
22 —
24 —
26 —
28 —
30 —
32 —

L9-509.
3.25.59.BP.

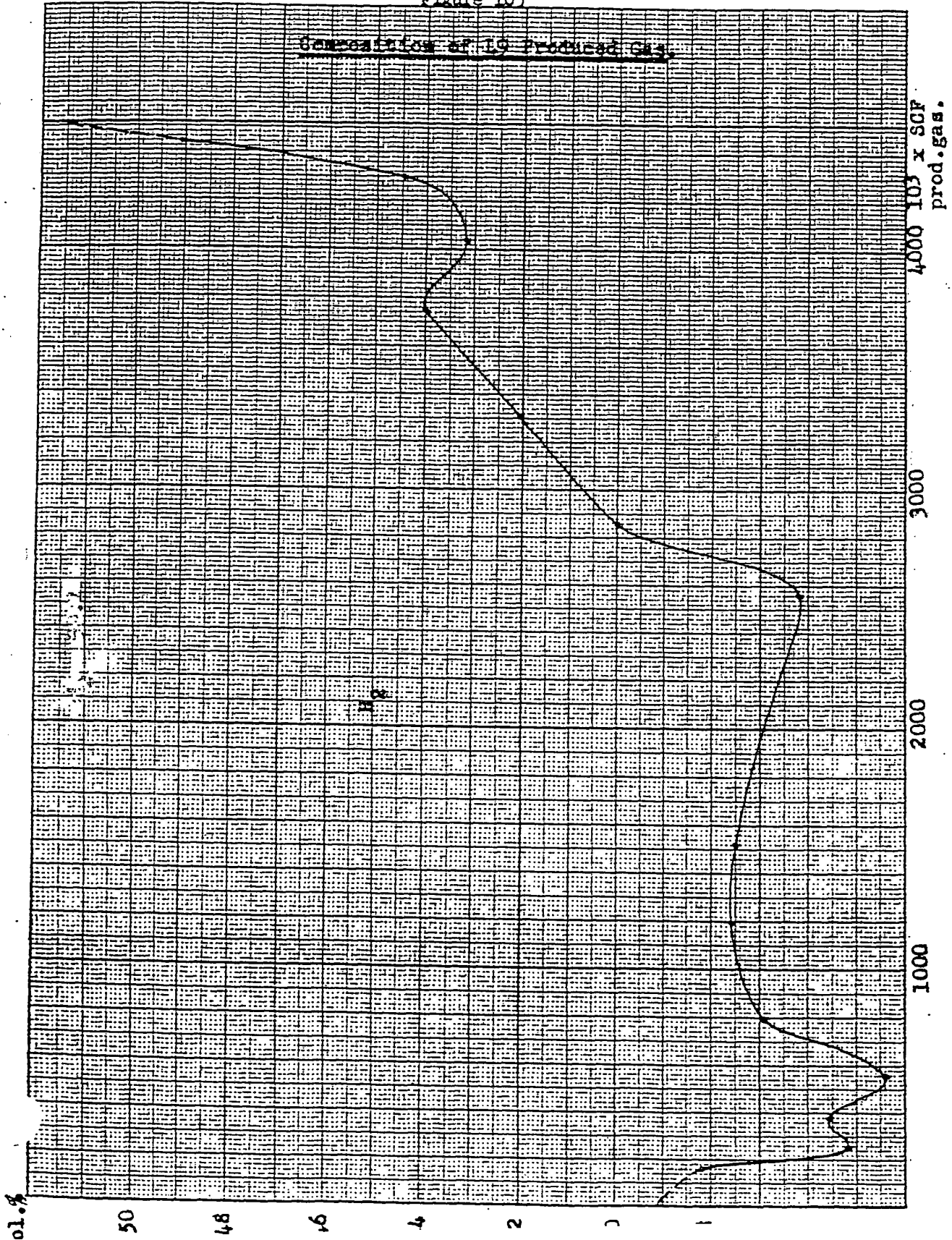
Figure 10h



L9-508-1.
3.25.59.BP.

Figure 105

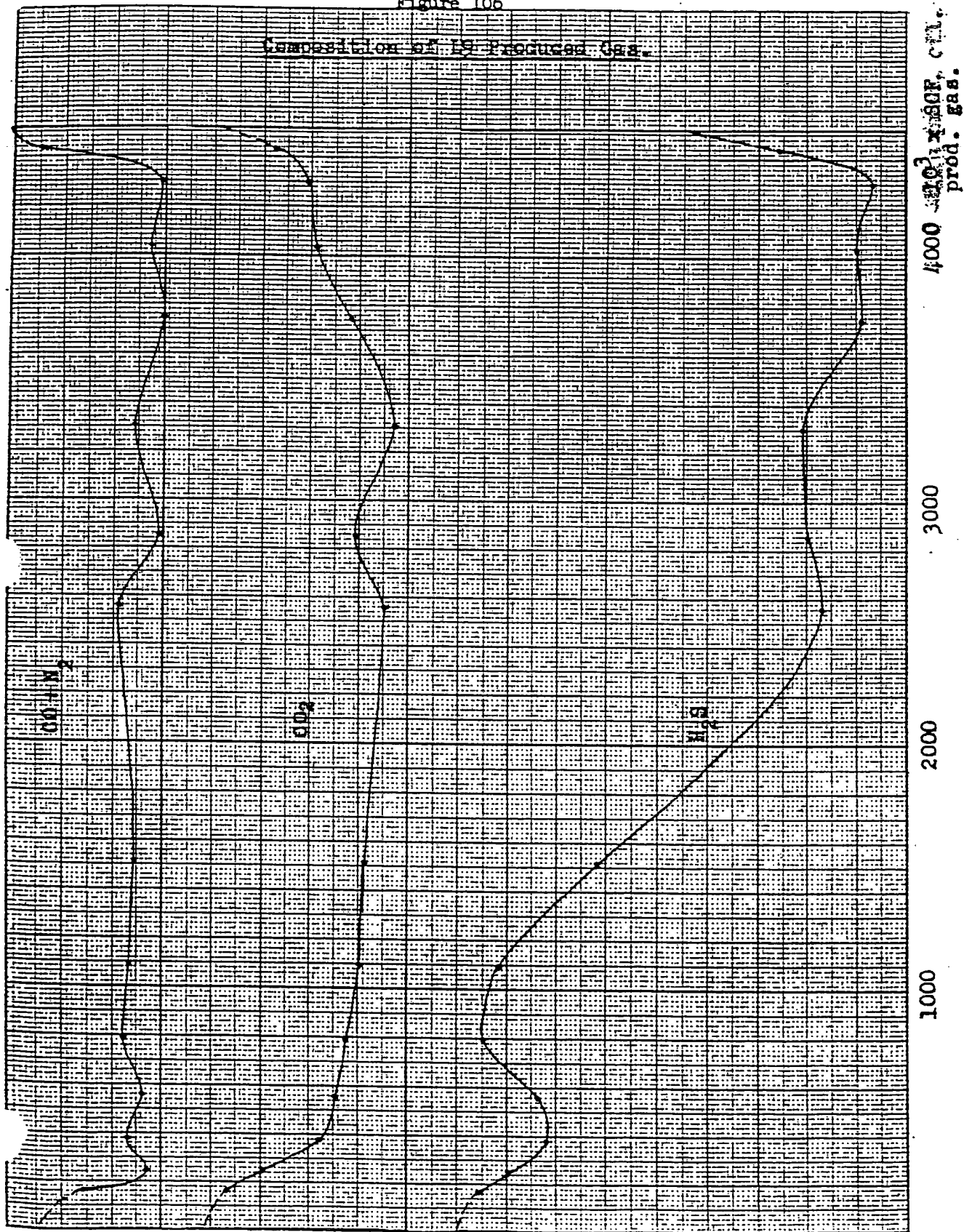
Composition of L9 Produced Gas



L9-508-2.
3.25.59.BP.

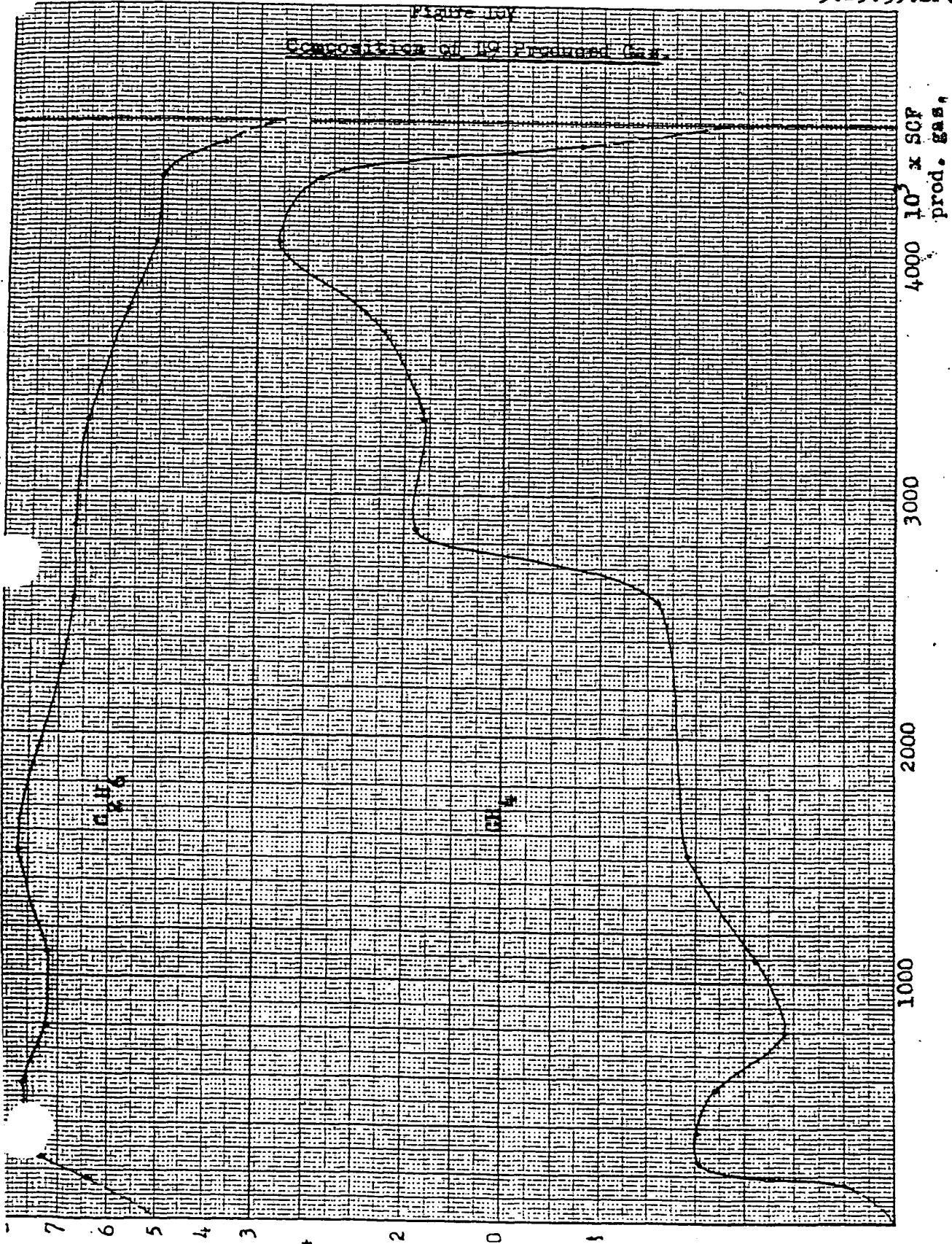
Figure 106

Composition of L9 Produced Gas.

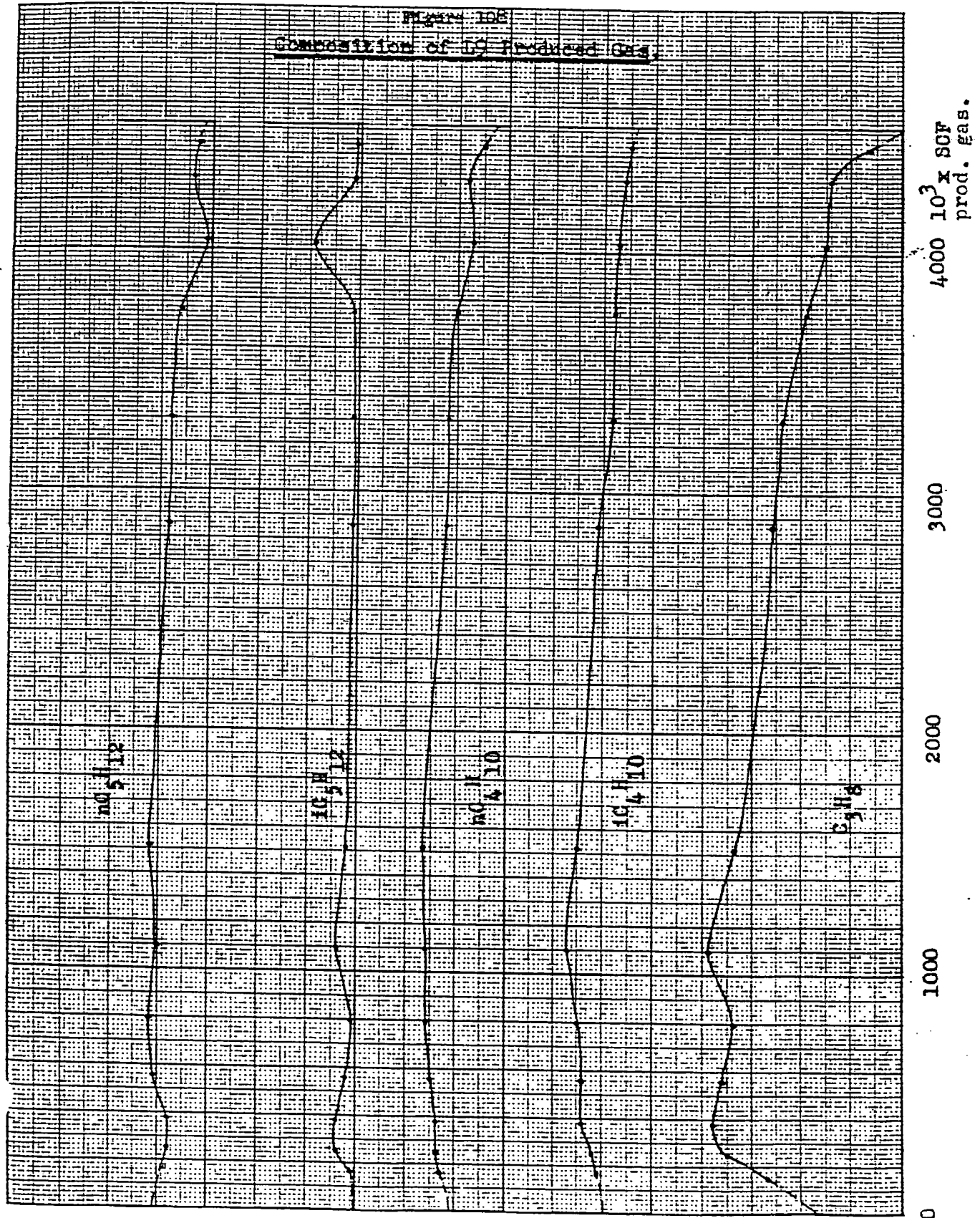


L9-508-3.
3.25.59.BP.

Figure 10
Composition of L9 Produced Gas



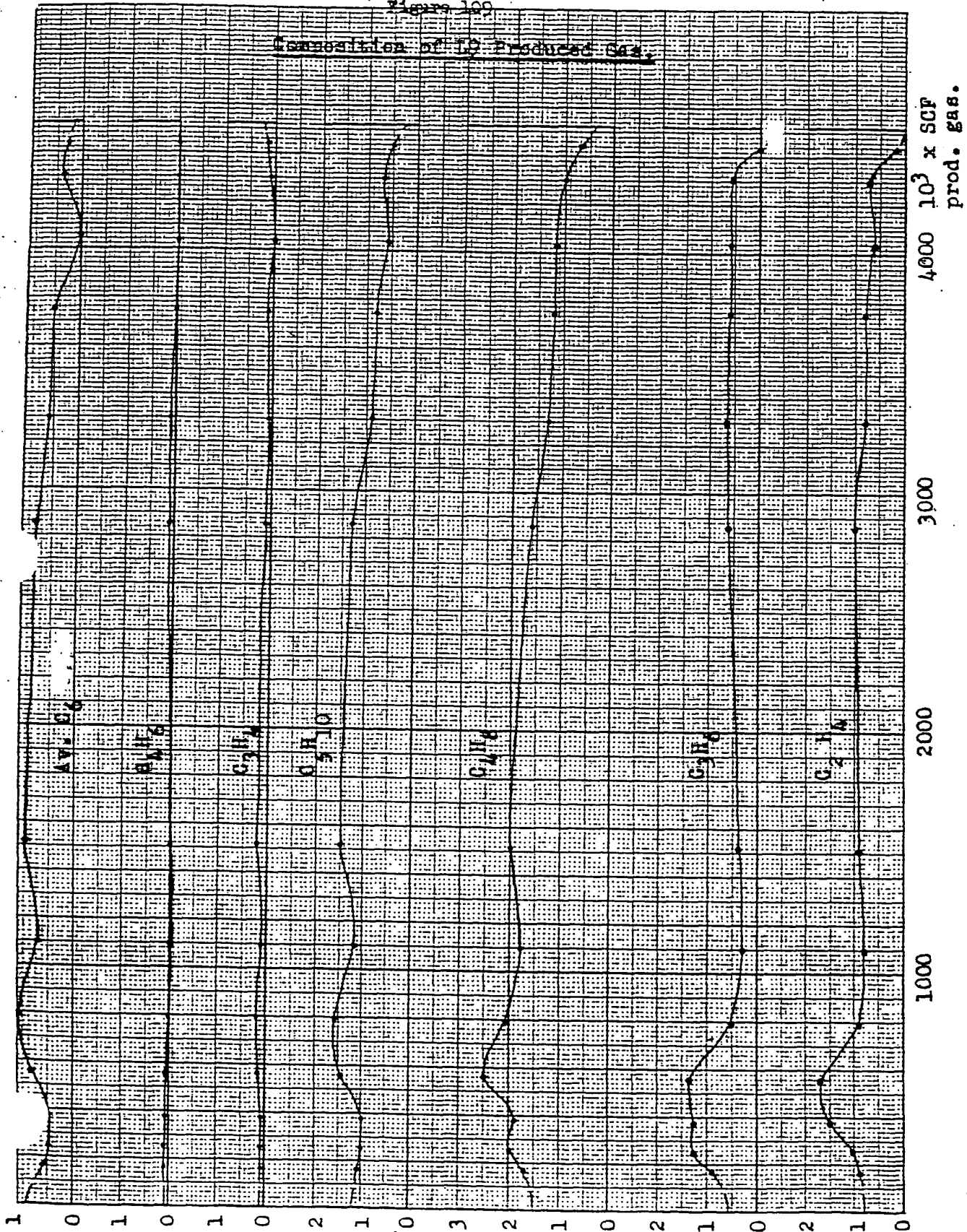
L9-508-4.
3.25.59.BP.



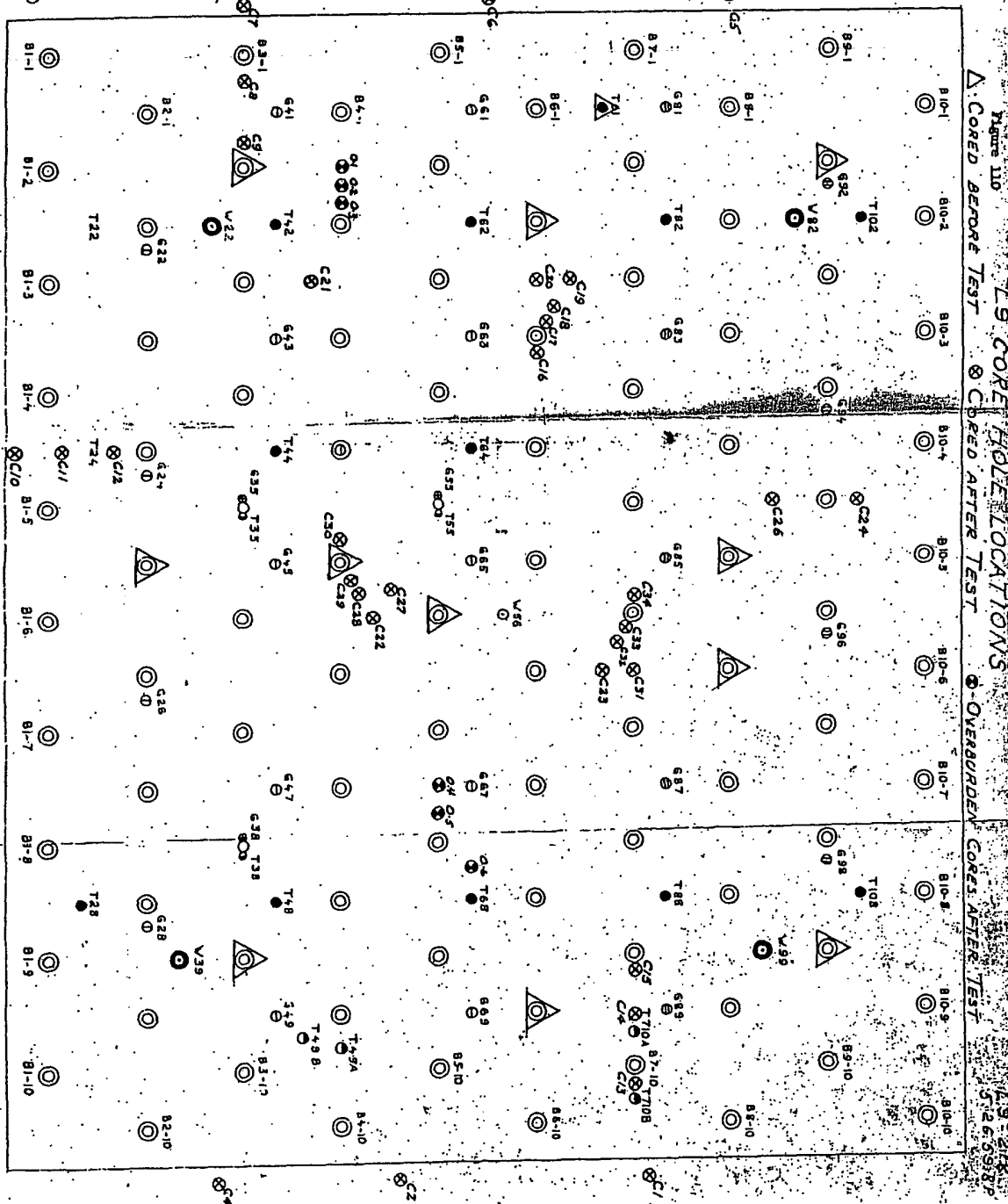
L9-508-5.
3.25.59.BP.

Figure 100

Composition of L₉ Produced Gas



L 9-101.
JAN. 21 1958. 8P
REVISED 3.15.58. 8P

[illegible]

L9 CORE HOLE LOCATIONS
Figure 110

<u>Core Hole No.</u>	<u>Locations</u>
C1	10' N. of B7-10 then 1' west
C2	10' N. of B5-10 then 4' - 4" west
C3	7' N. of C2
C4	10' N. of B3-10 then 2' - 4" east
C5	10' S. of B8-1
C6	10' S. of B6-1 then 4' - 4" east
C7	5' S. of B3-1
C8	2' N. of B3-1 (between B3-1 and B3-2)
C9	2'-3-1/2" S. of B3-2 (-")
C10	11'-5-1/2" E. of B2-4
C11	7'-10-1/2" E. of B2-4
C12	3'-8" E. of B2-4 (between B2-4 and T24)
C13	1'-5" N. of B7-10
C14	4'-6" S. of B7-10 (between B7-10 and B7-9)
C15	1'-1-1/2" N. of B7-9 (-")
C16	10" N. of B6-3
C17	1'-5" from B6-3 towards B7-2
C18	2'-11" " " " "
C19	5'-9" " " " " (between B6-2, 6-3, 7-3)
C20	5' S. of B6-3 (between B6-2 and B6-3)
C21	Midway between B3-3, B4-2, and B4-3
C22	" " B4-5, B4-6, and B5-6
C23	" " B6-6, B7-6, and B7-8
C24	2'-5-1/2" west of B9-5
C25	3'-5" east of B9-5

L9 CORE HOLE LOCATIONS
Figure 110

<u>Core Hole</u> <u>No.</u>	<u>Locations</u>
C26	4'-5" east of B9-5
C27	5' from B4-5 between B4-5 and B5-6.
C28	2'-11" from B4-5 towards B5-7
C29	1'-5" " " " "
C30	11" " " " B4-4
C31	5' from B7-6 between B7-6 and B7-7
C32	2'-11" from B7-6 towards B6-7
C33	1'-5" " " " "
C34	10" to 12" from B7-6 towards B7-5
C35	14'-7-1/2" east of B2-4

Figure 111

L9-215-1
5-19-59 RH

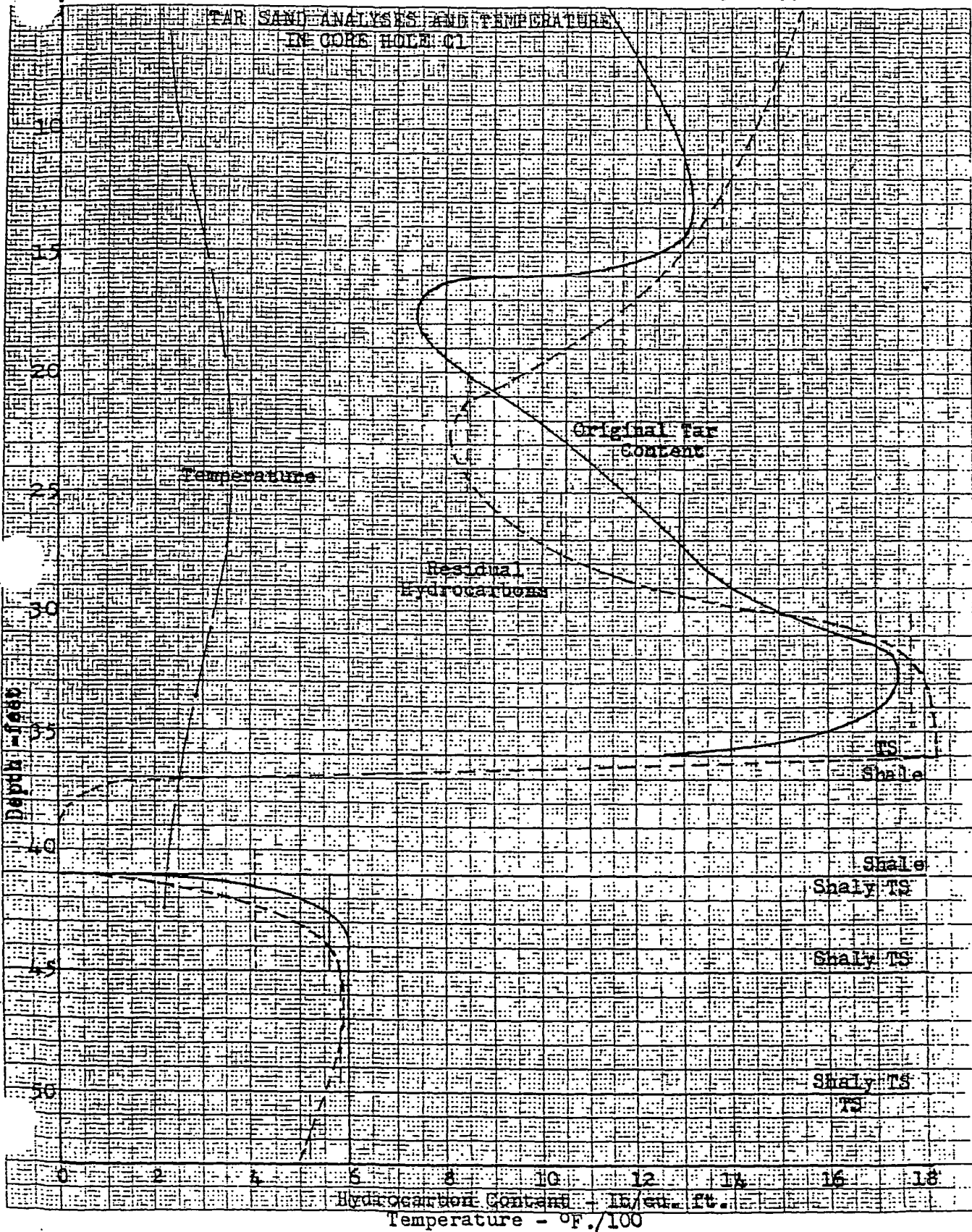


Figure 112

L9-215-2
5-21-59 RH

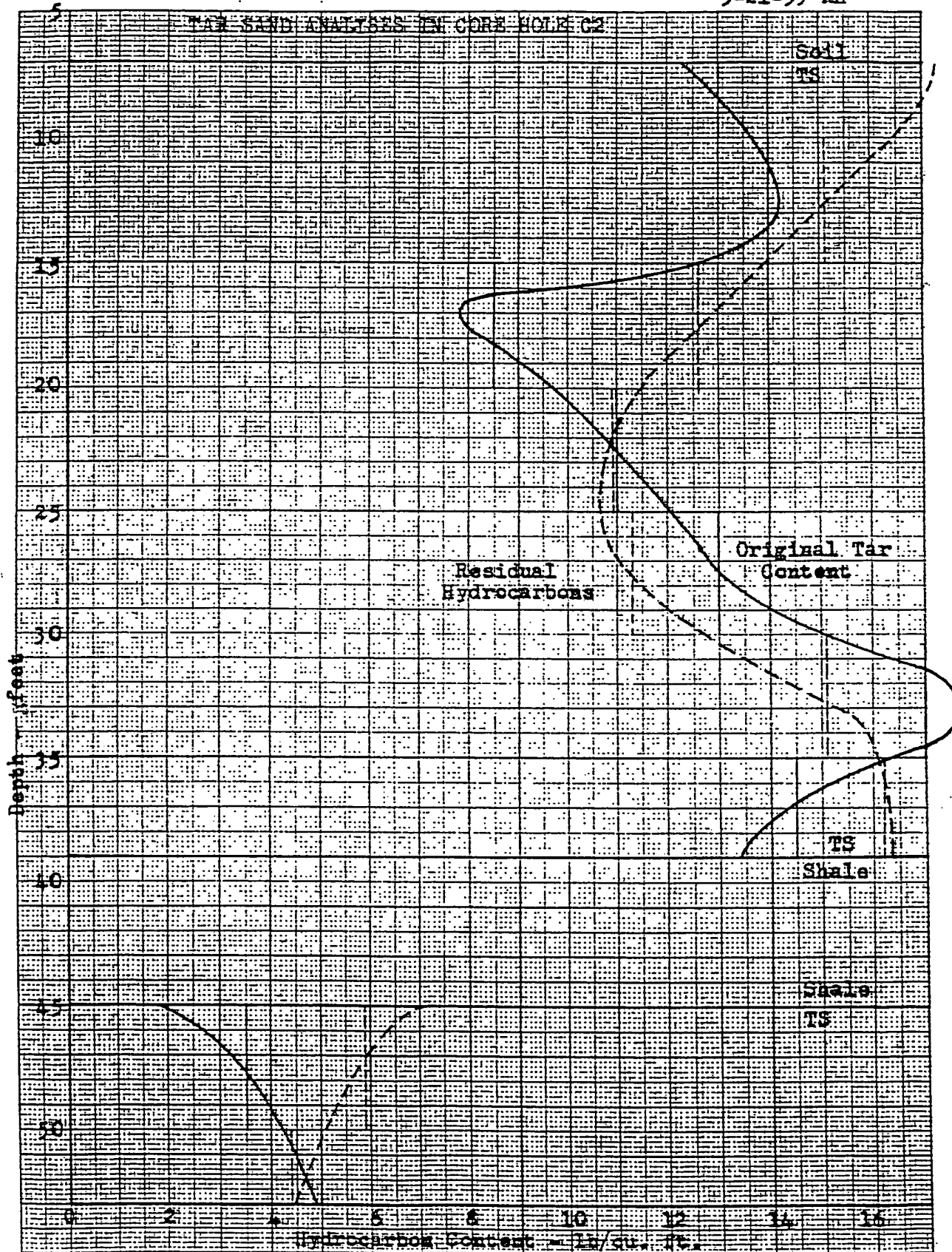


Figure 113

TAR SAND ANALYSES IN CORE HOLE C3

19-215-3

5-21-59 RH

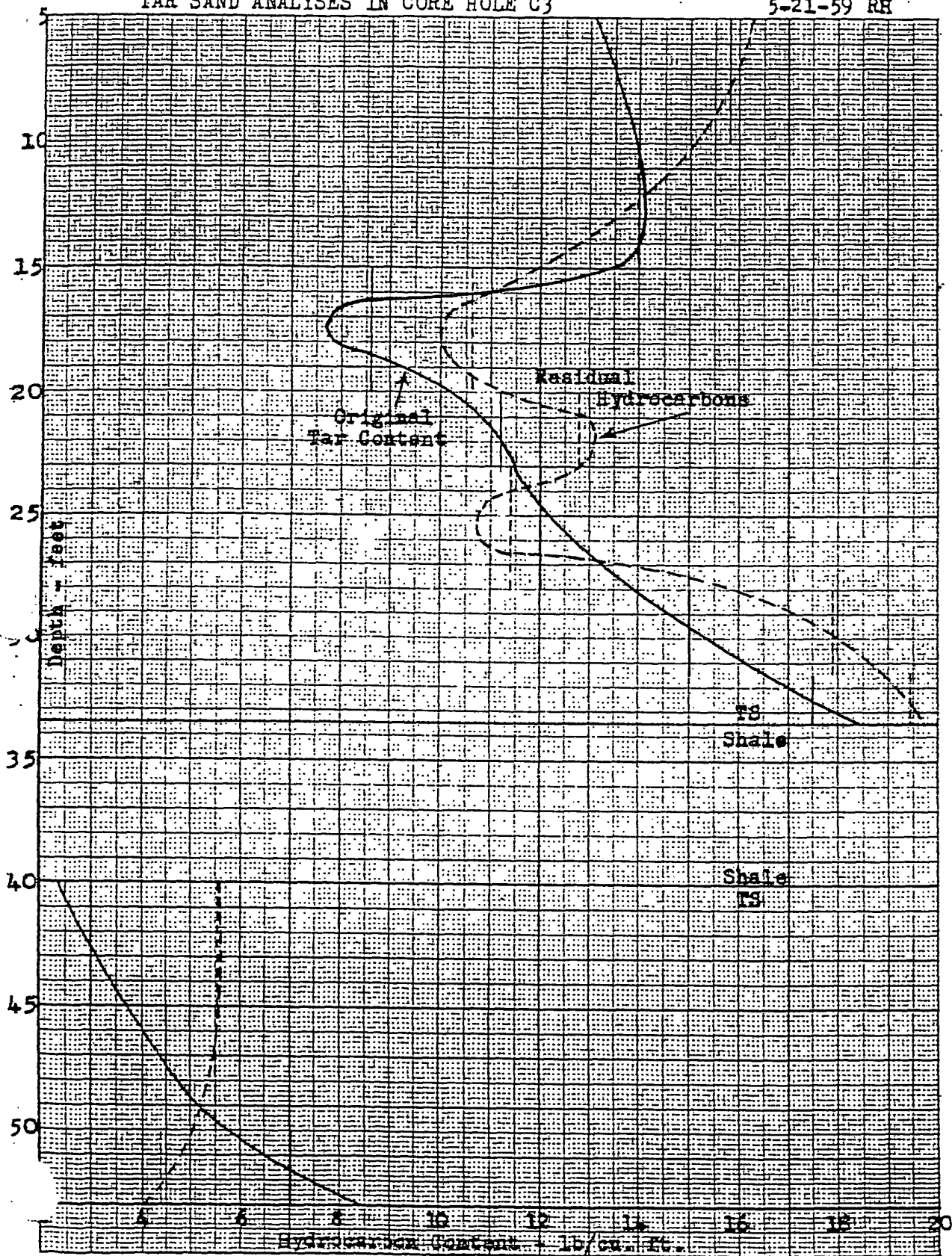
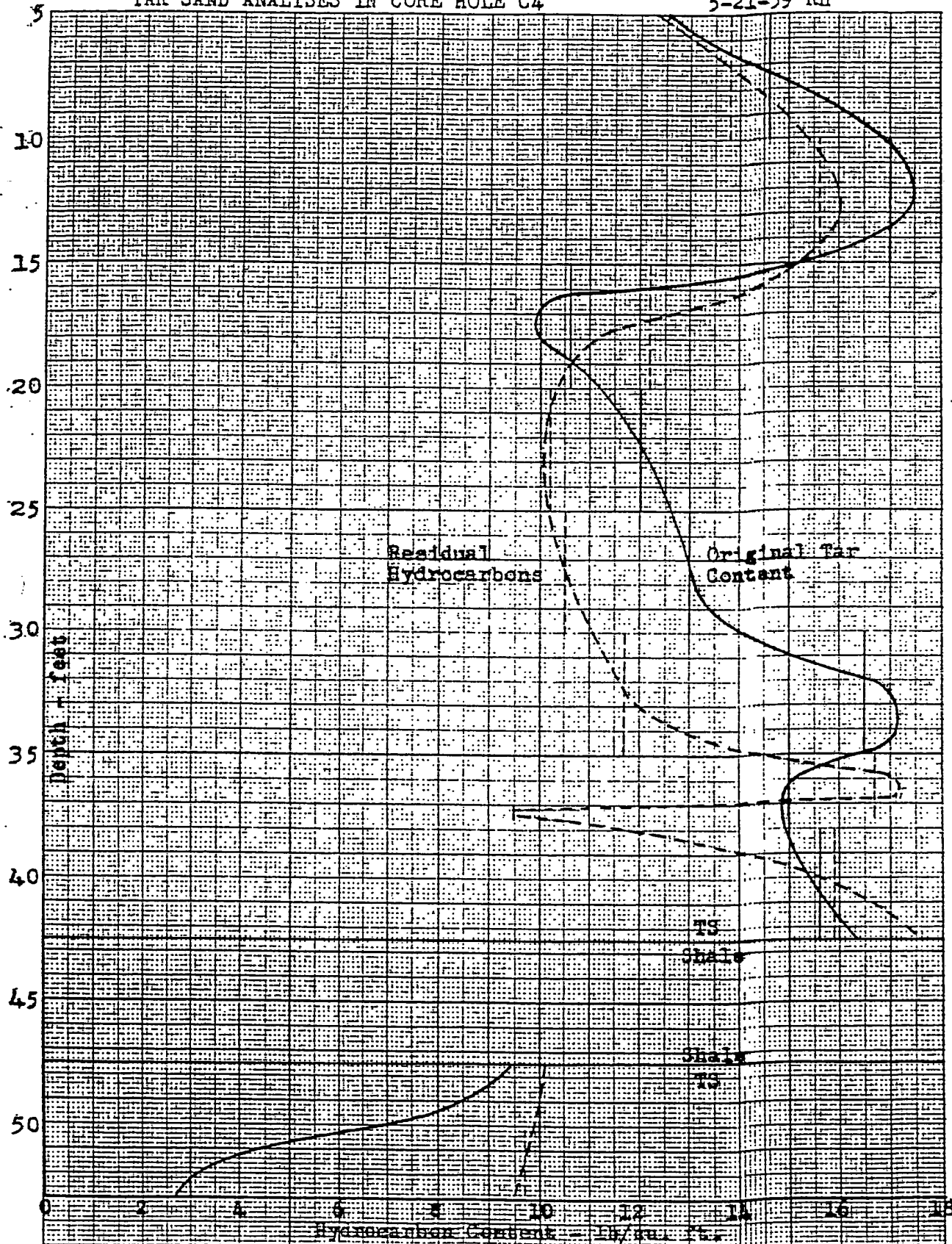


Figure 114

TAR SAND ANALYSES IN CORE HOLE C4

L9-215-4
5-21-59 RH

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L9-215-5
5-21-59 RH

Figure 115

TAR SAND ANALYSES IN CORE HOLE C5

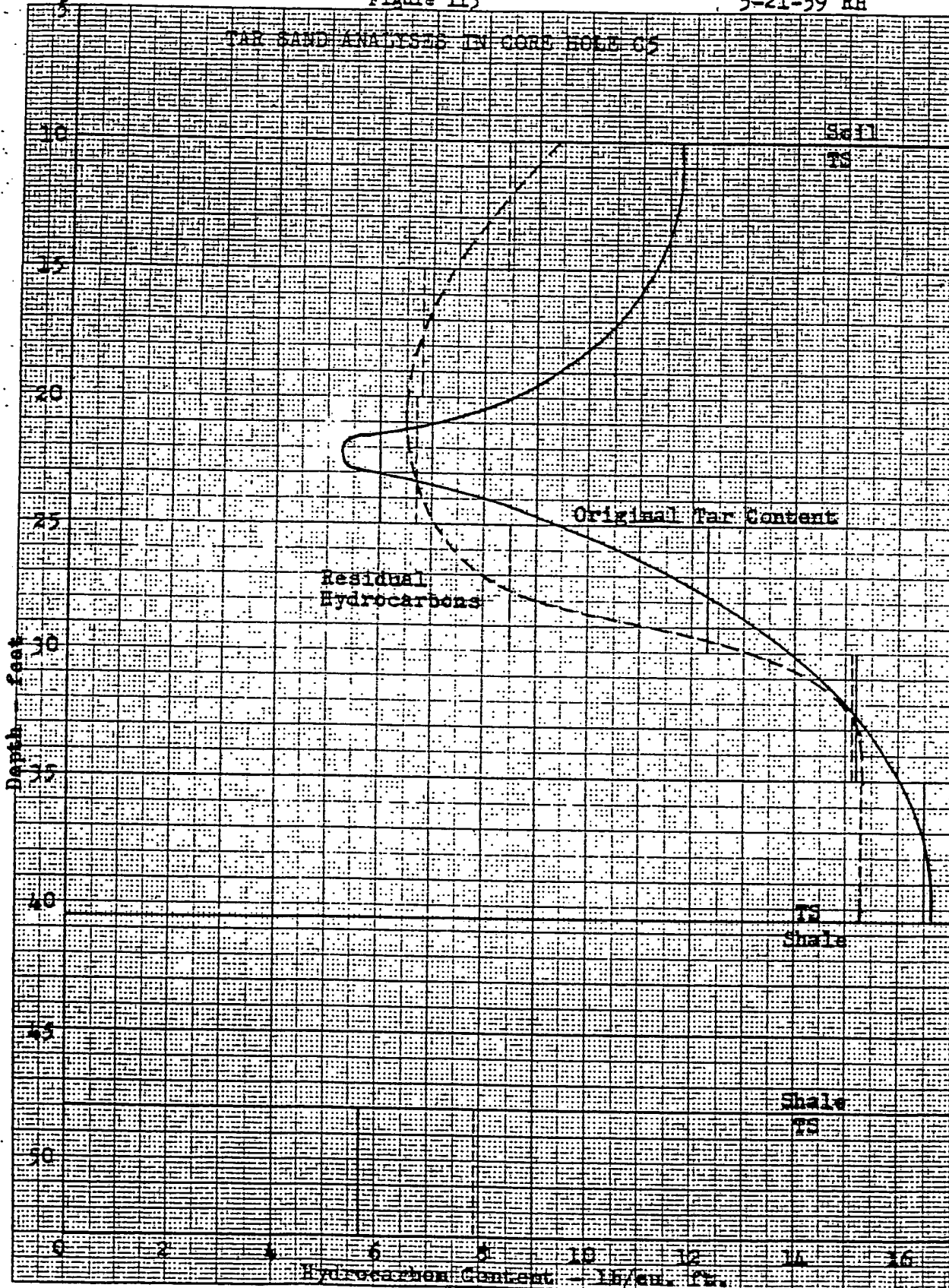


Figure 116

L9-215-6
5-21-59 RH

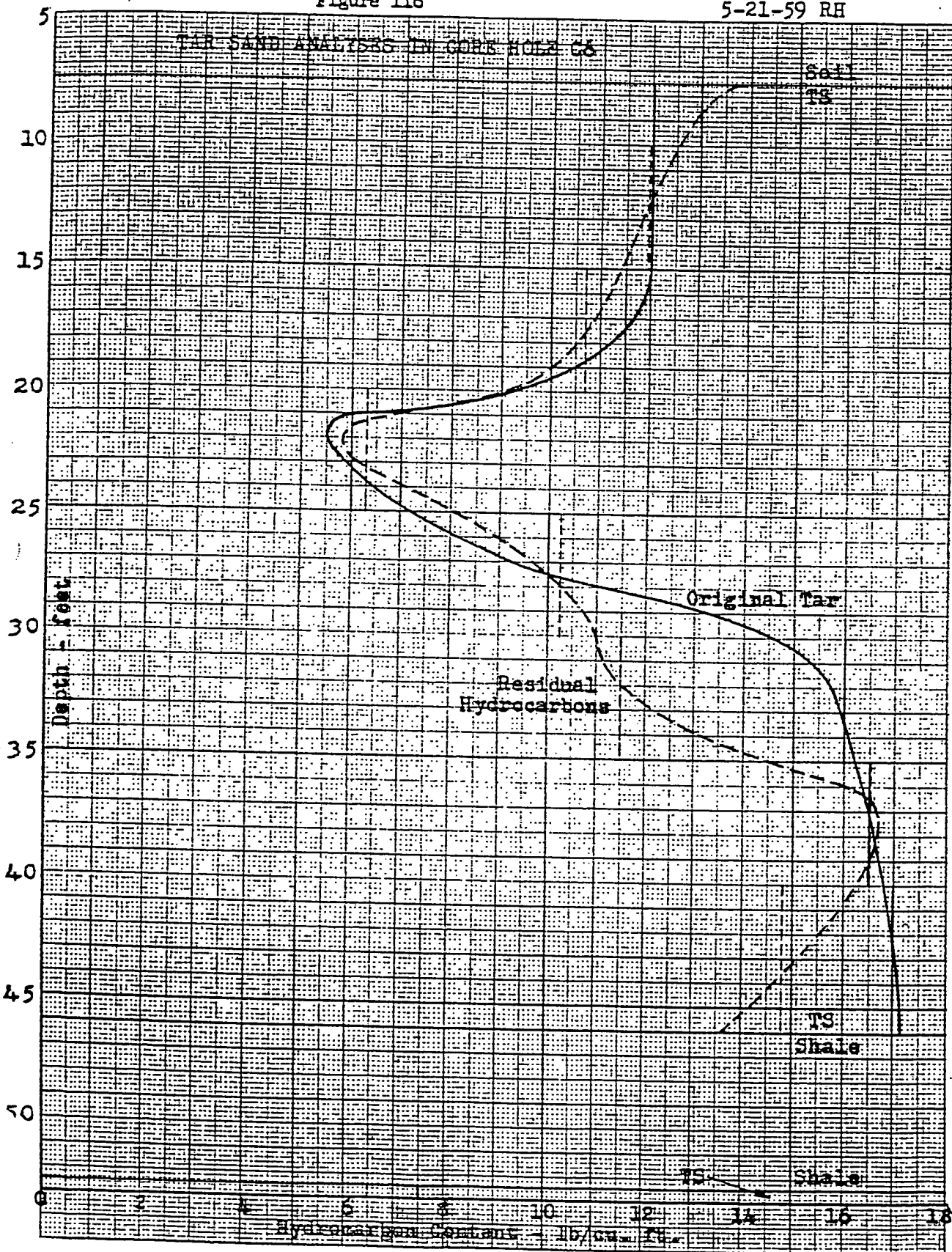


Figure 117

L9-215-7
5-21-59 RH

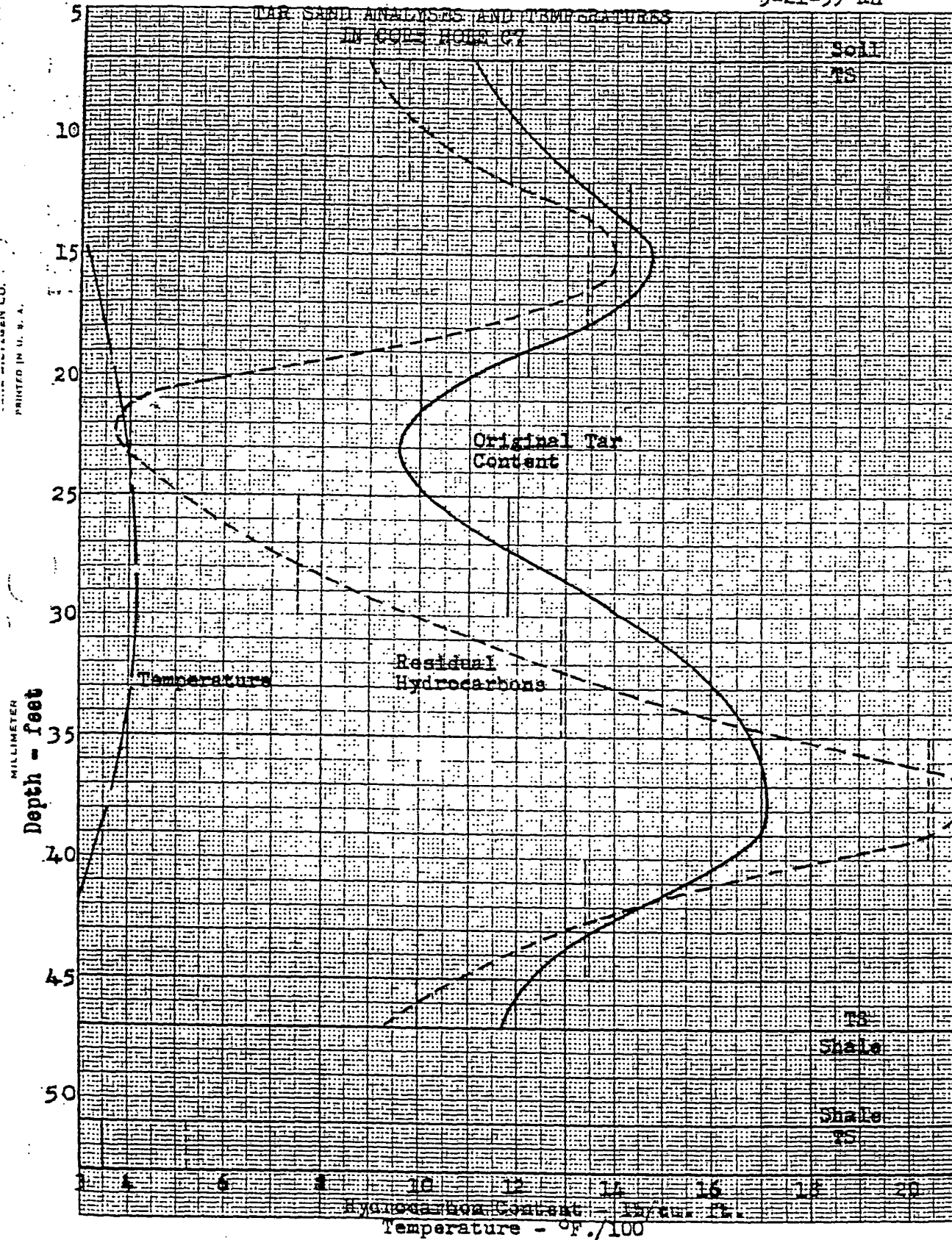


Figure 118

L9-215-8
5-21-59 RH

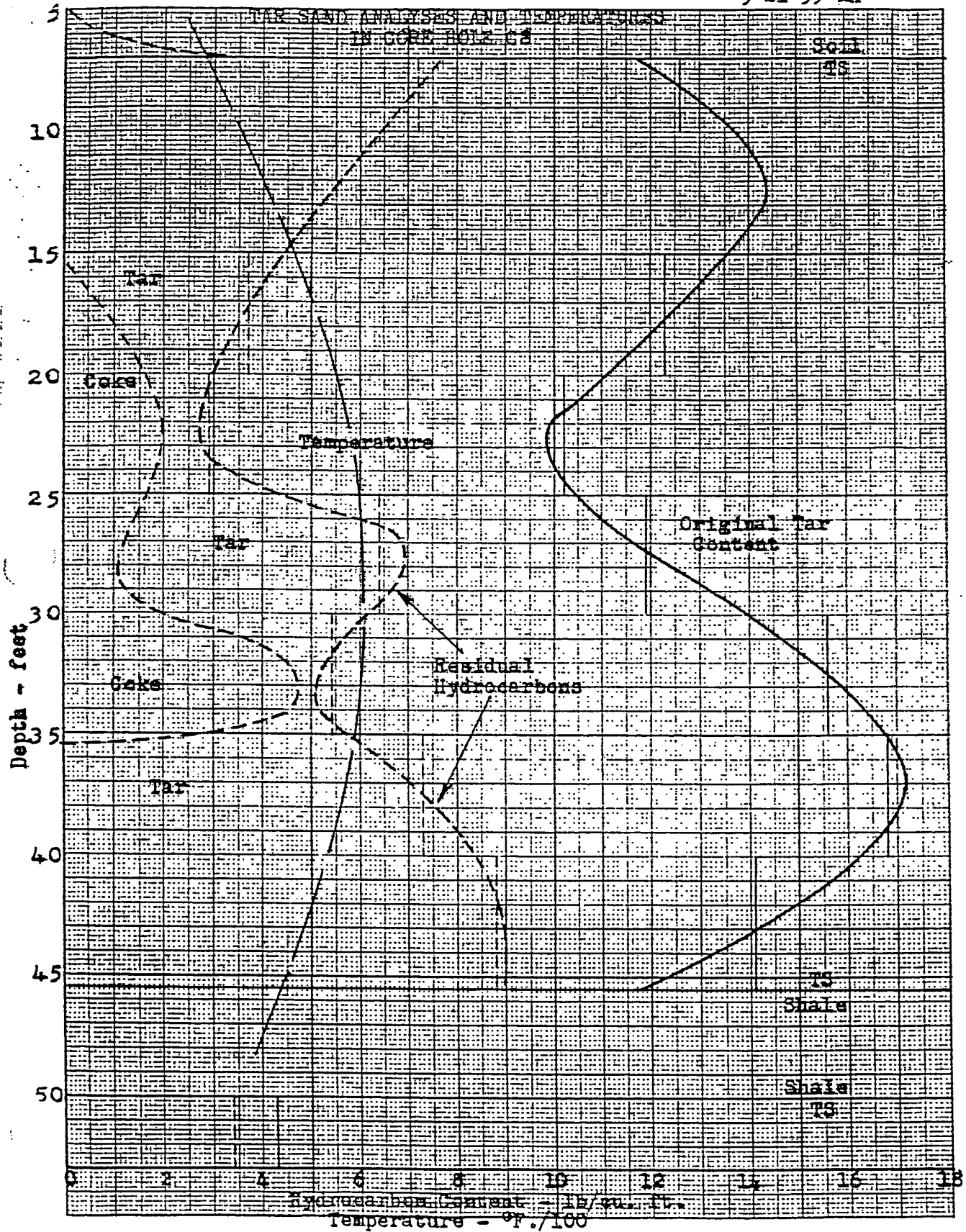


Figure 119

L9-215-9
5-25-59 RH

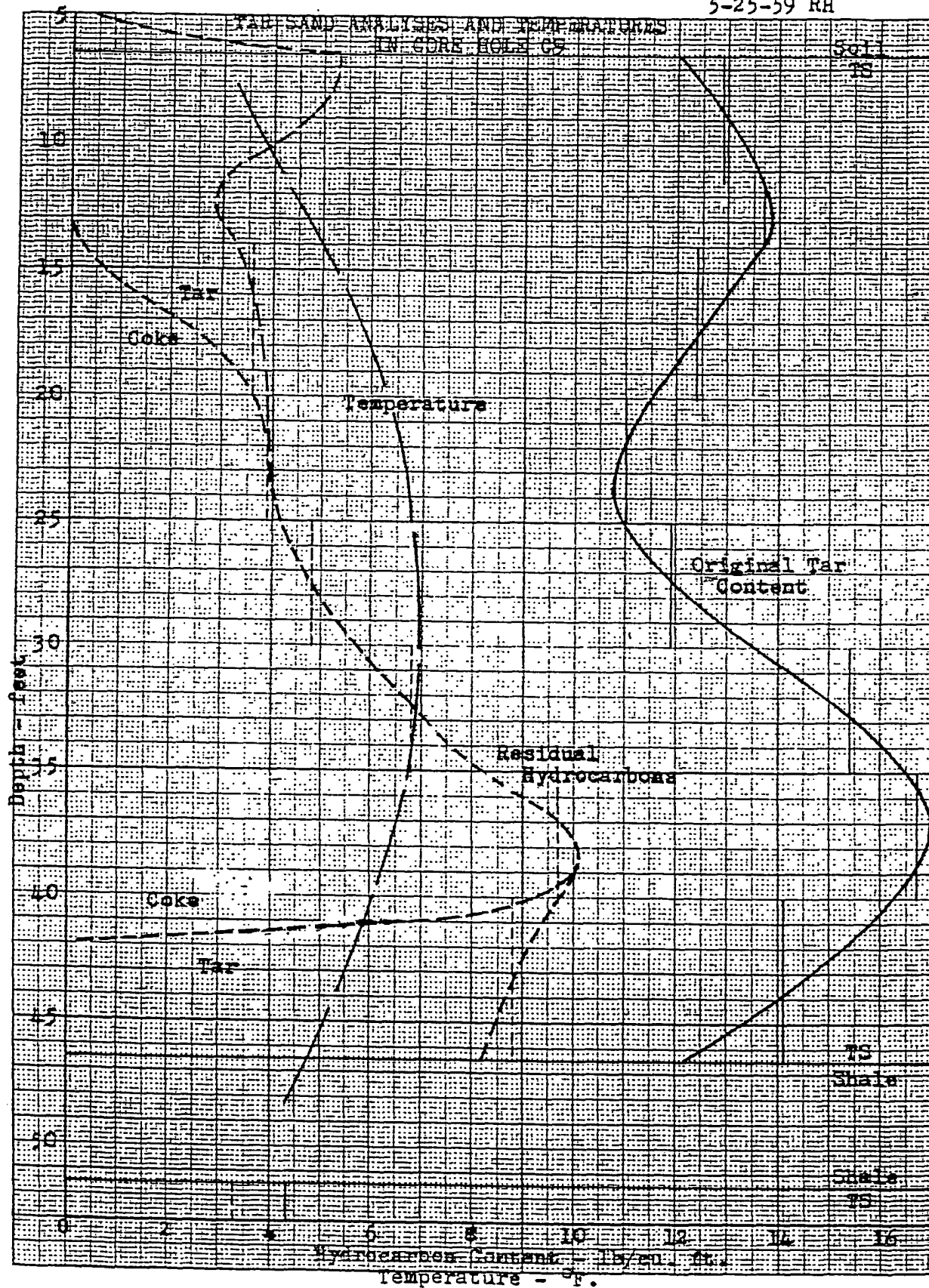


Figure 120

L9-215-10
5-19-59 RH

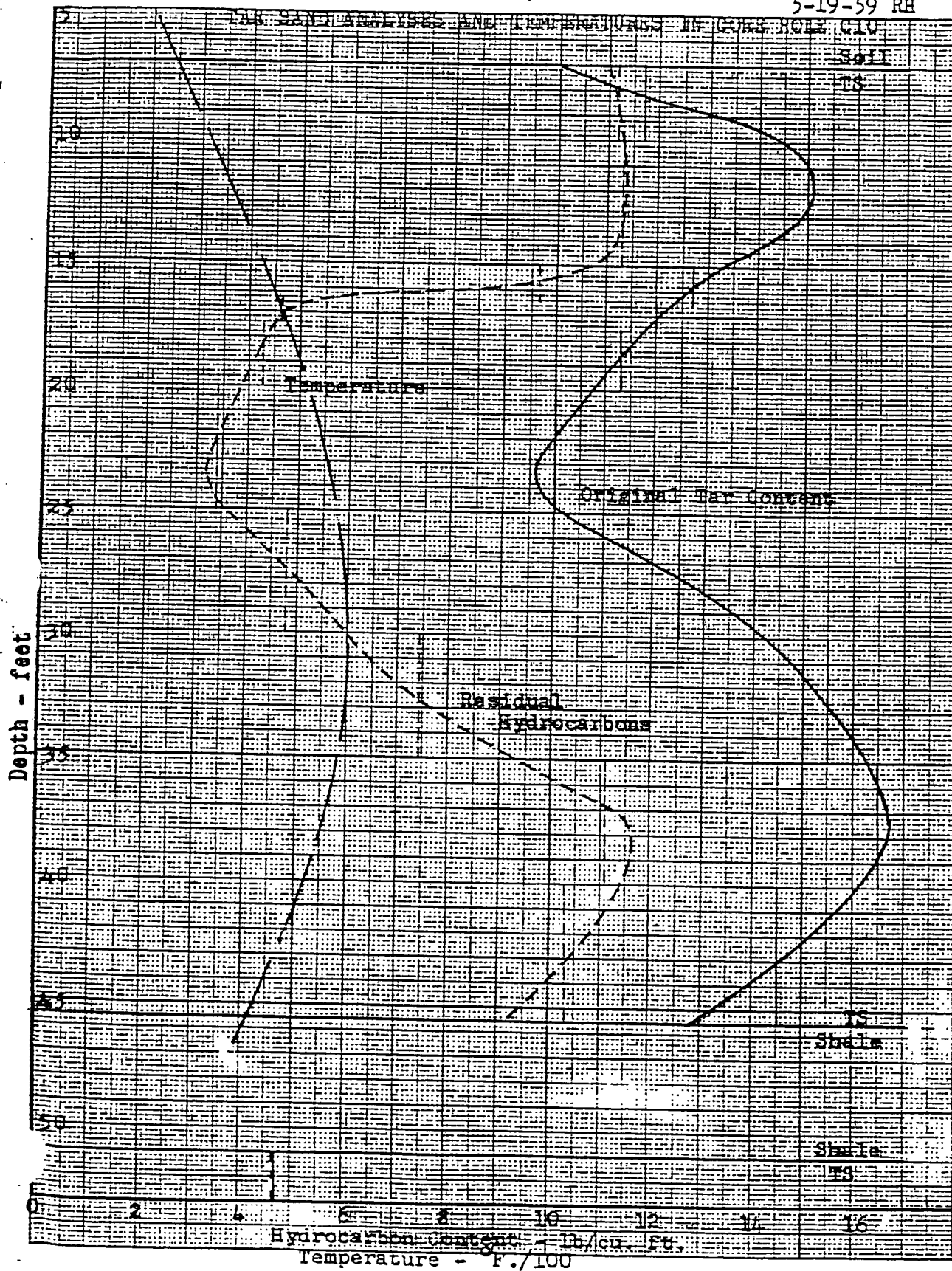


Figure 121

L9-215-11
5-19-59 RH

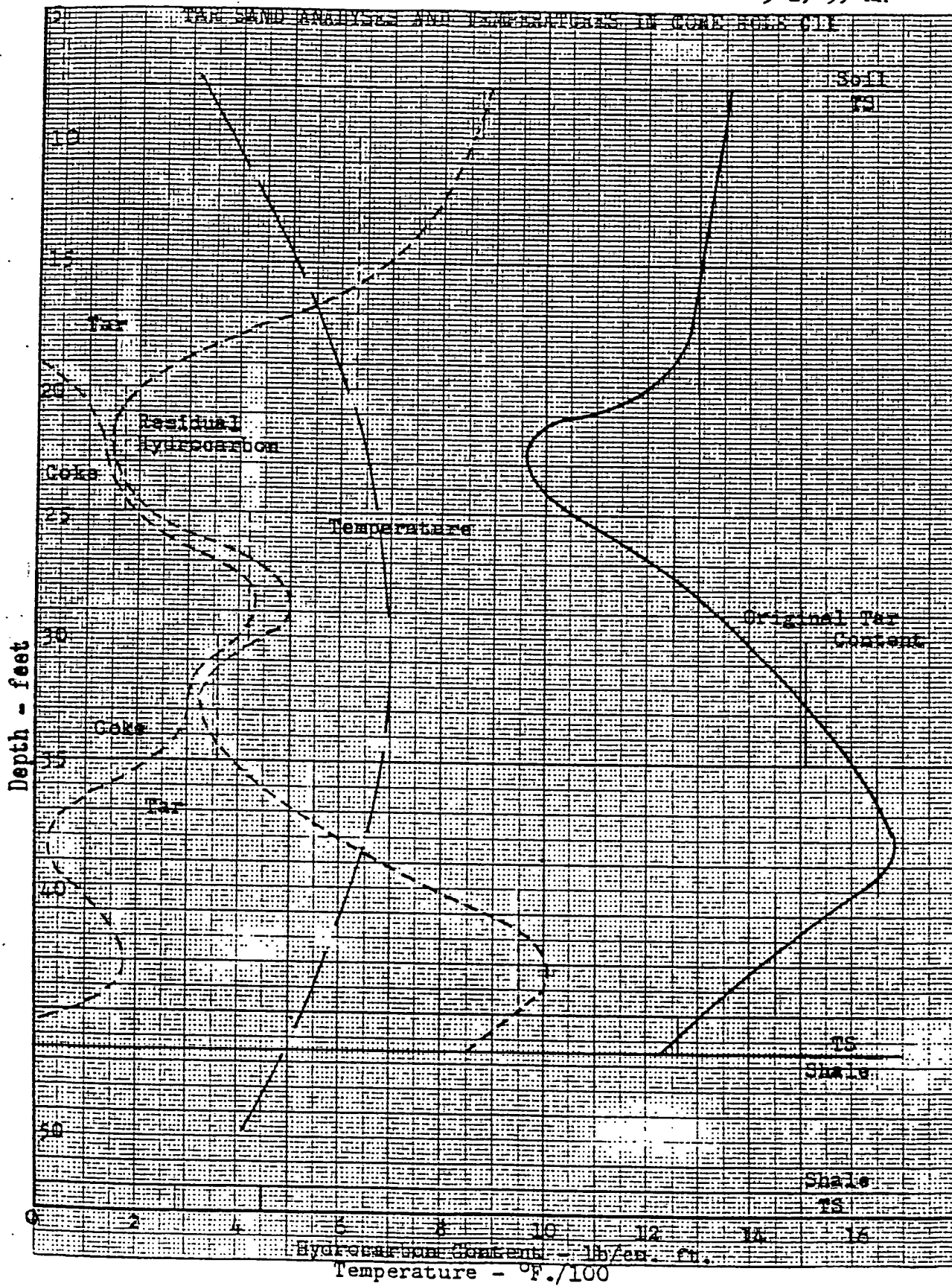


Figure 122

L9-215-12
5-27-59 RH

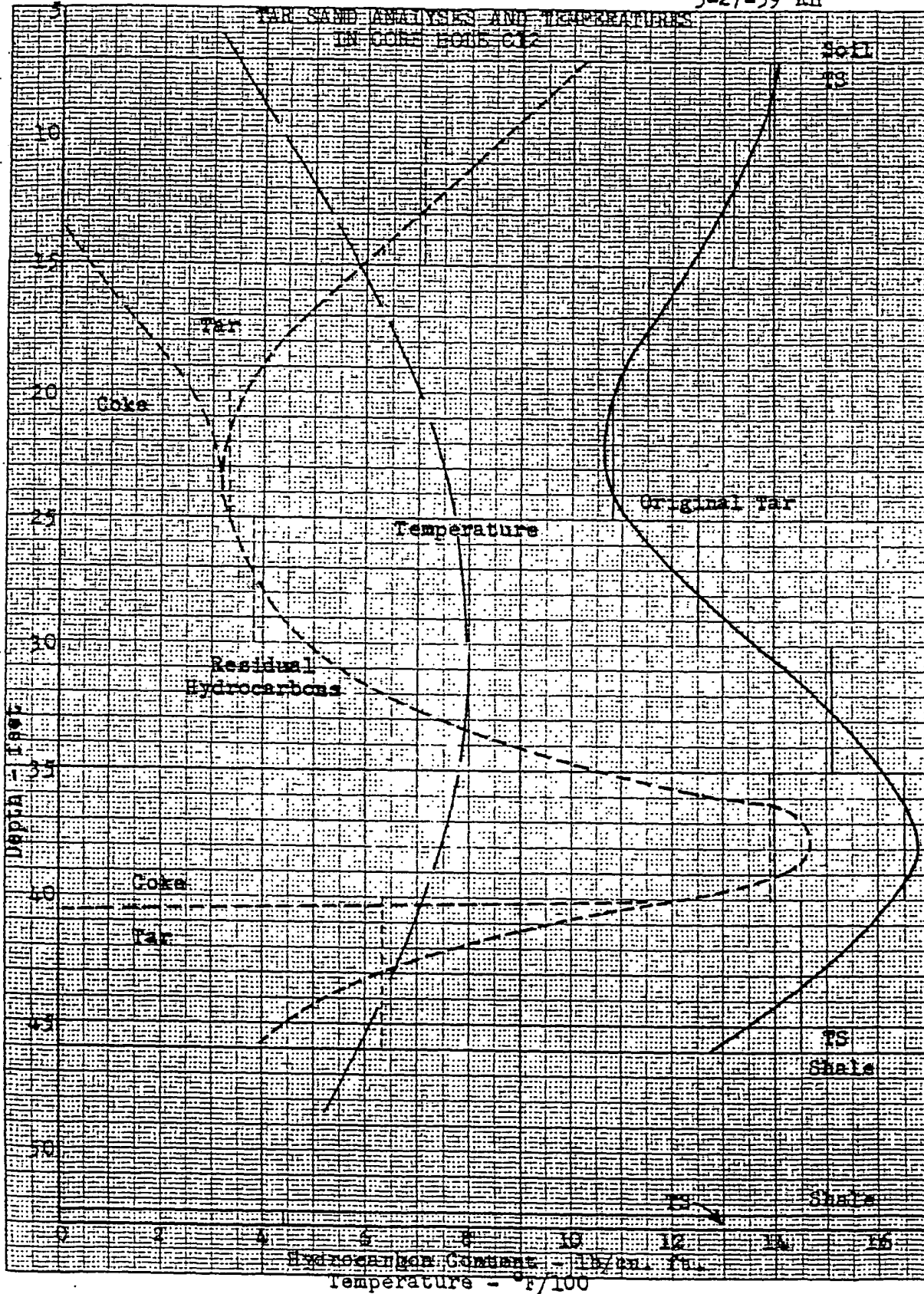


Figure 123
TAR SAND ANALYSES AND TEMPERATURES

L9-215-13
5-19-59 RH

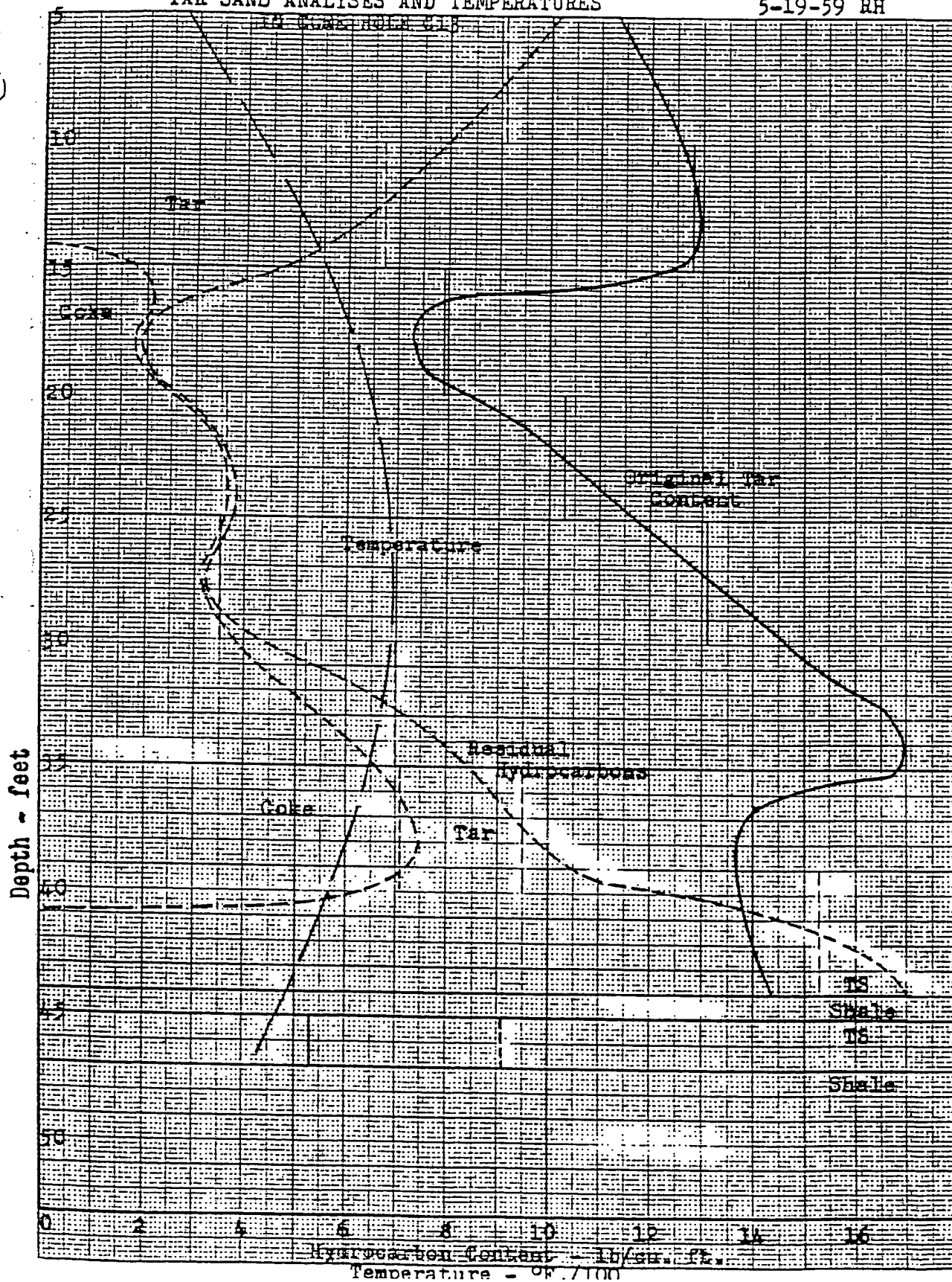


Figure 124

L9-215-14
5-19-59 RH

TAR SAND ANALYSES AND TEMPERATURES IN CORE HOLE C14

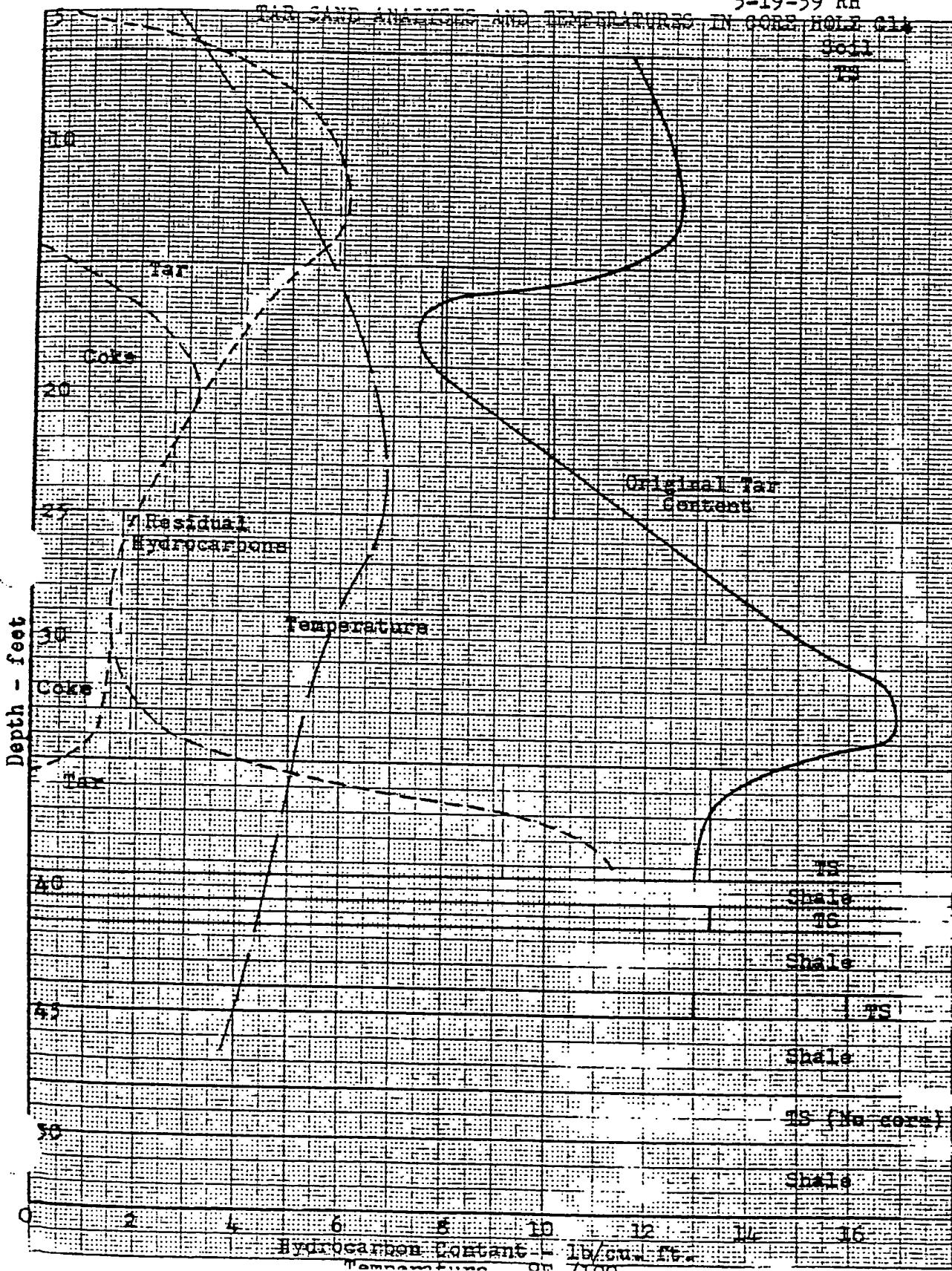


Figure 125

L9-215-15
5-27-59 RH

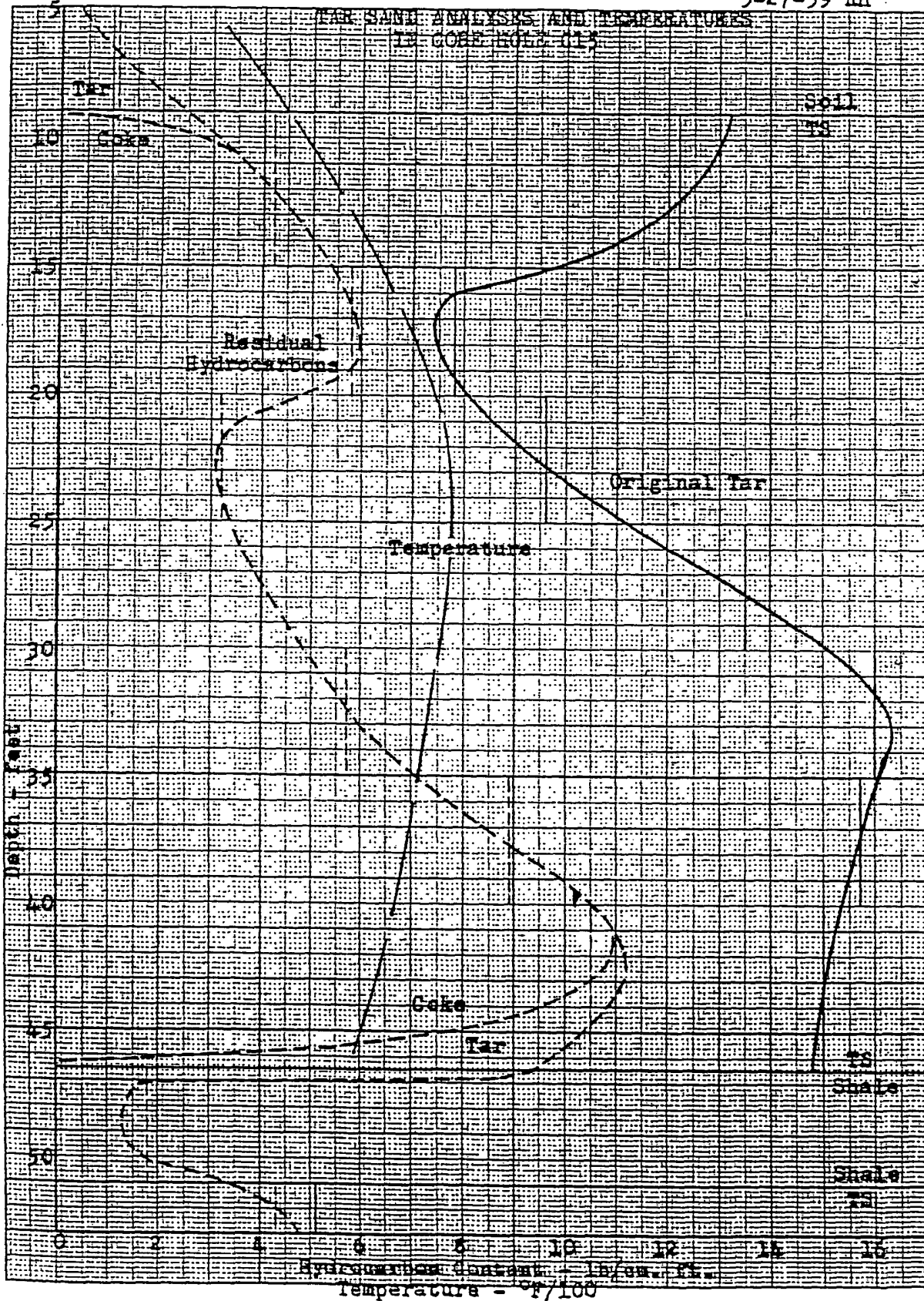


Figure 126

L9-215-16
5-14-59 RH

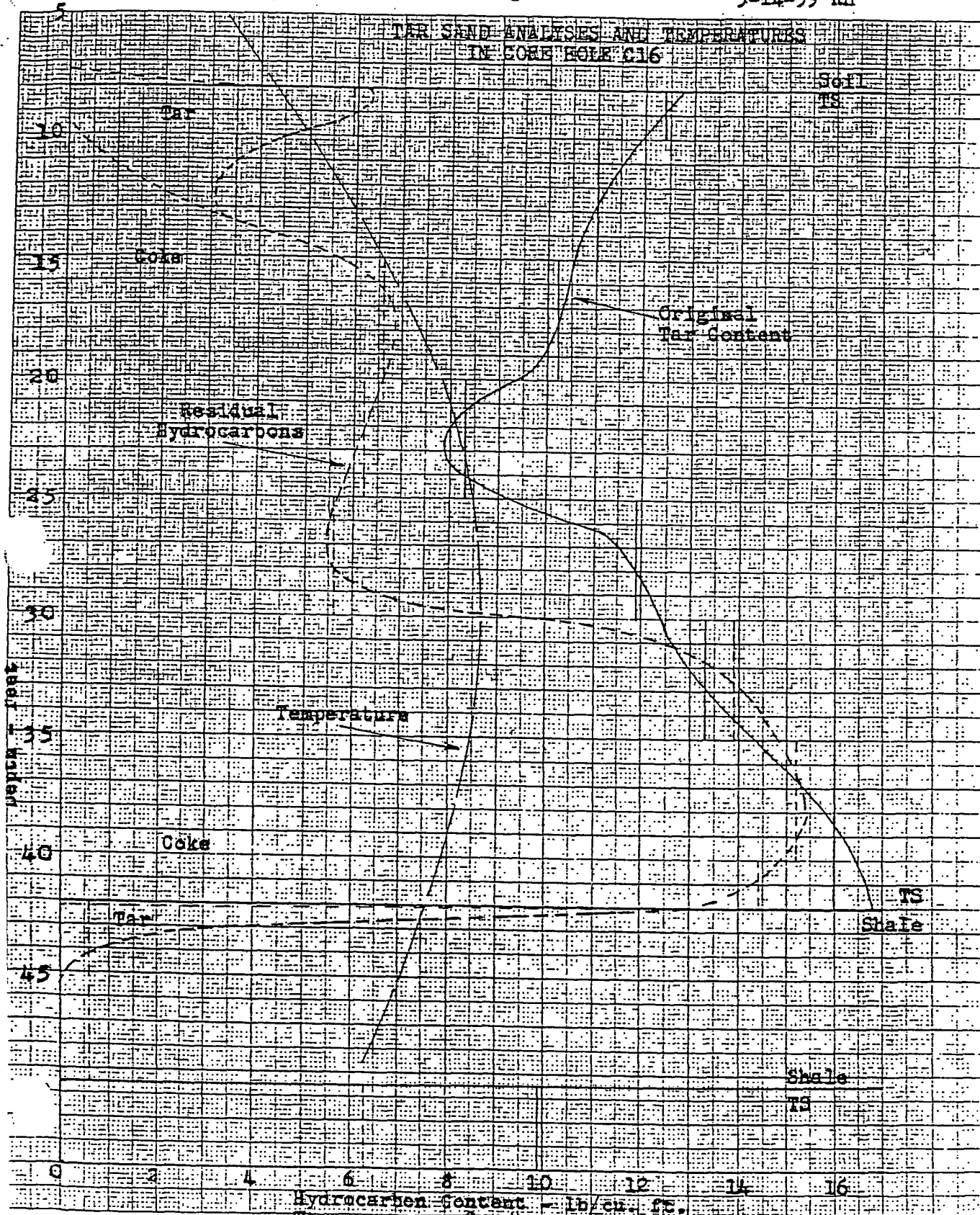


Figure 127

L9-215-17
5-18-59 RH

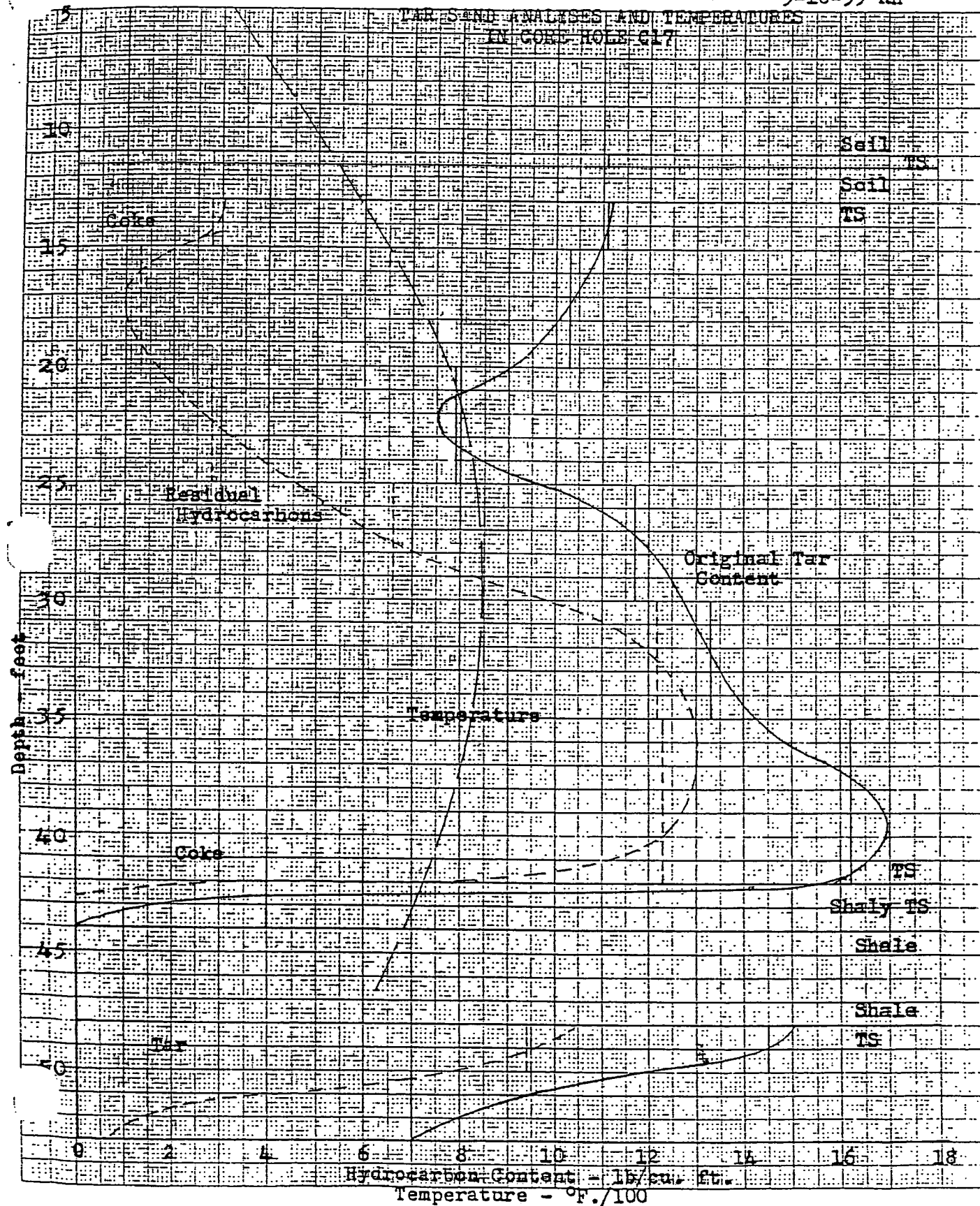


Figure 128

L9-215-18
5-18-59 RH

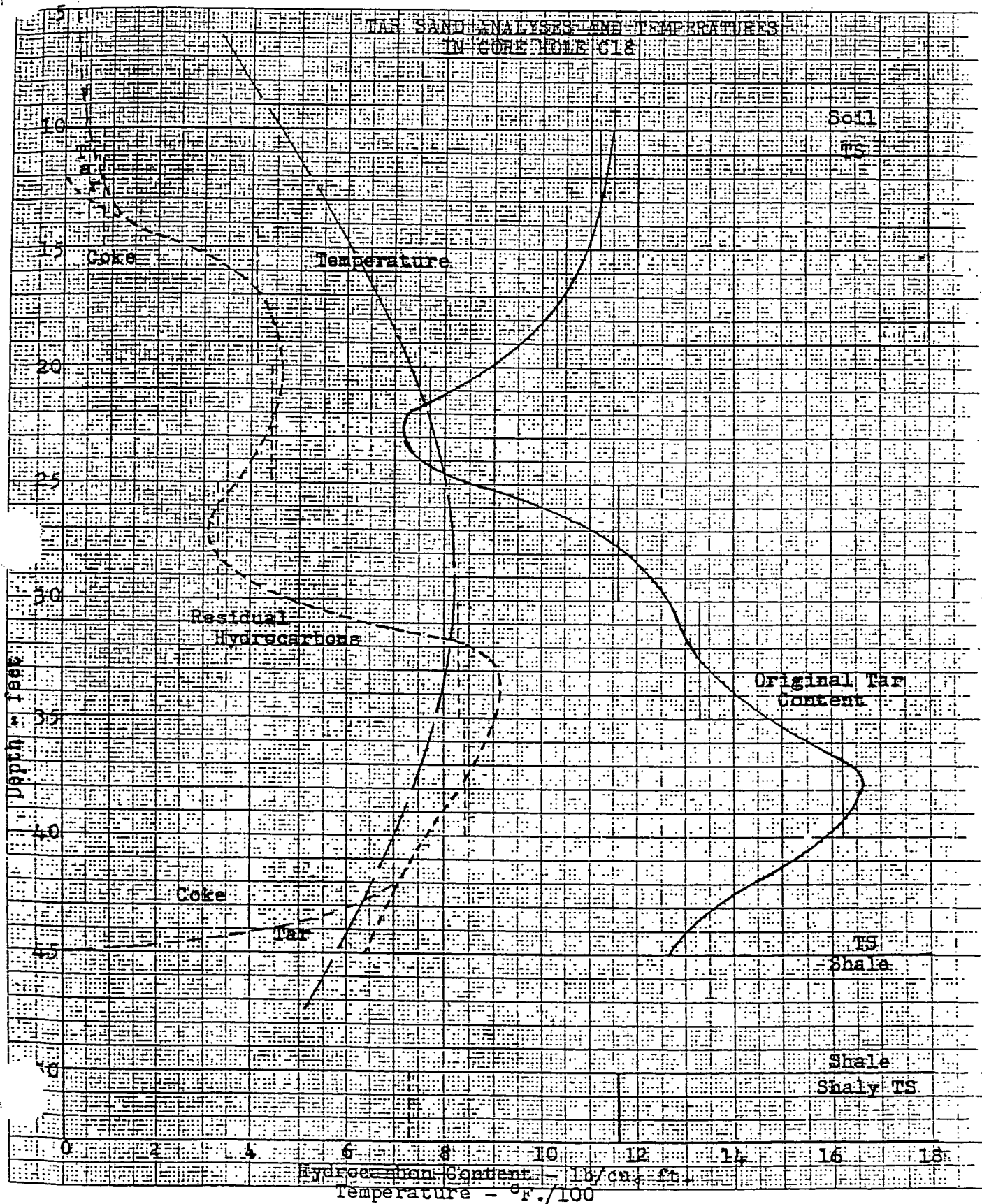


Figure 129

L9-215-19
5-18-59 RH

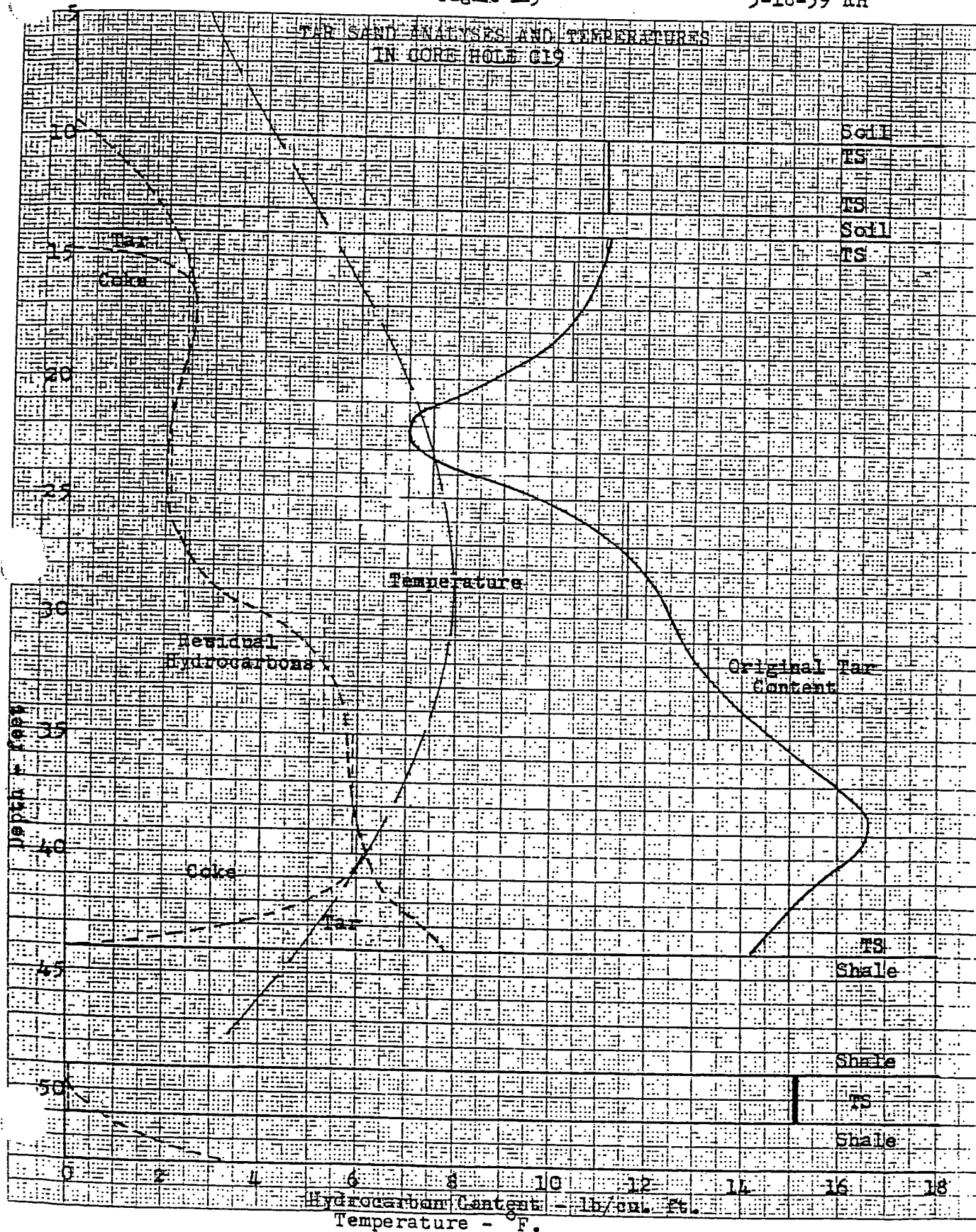


Figure 130

I9-215-20
5-18-59 RH

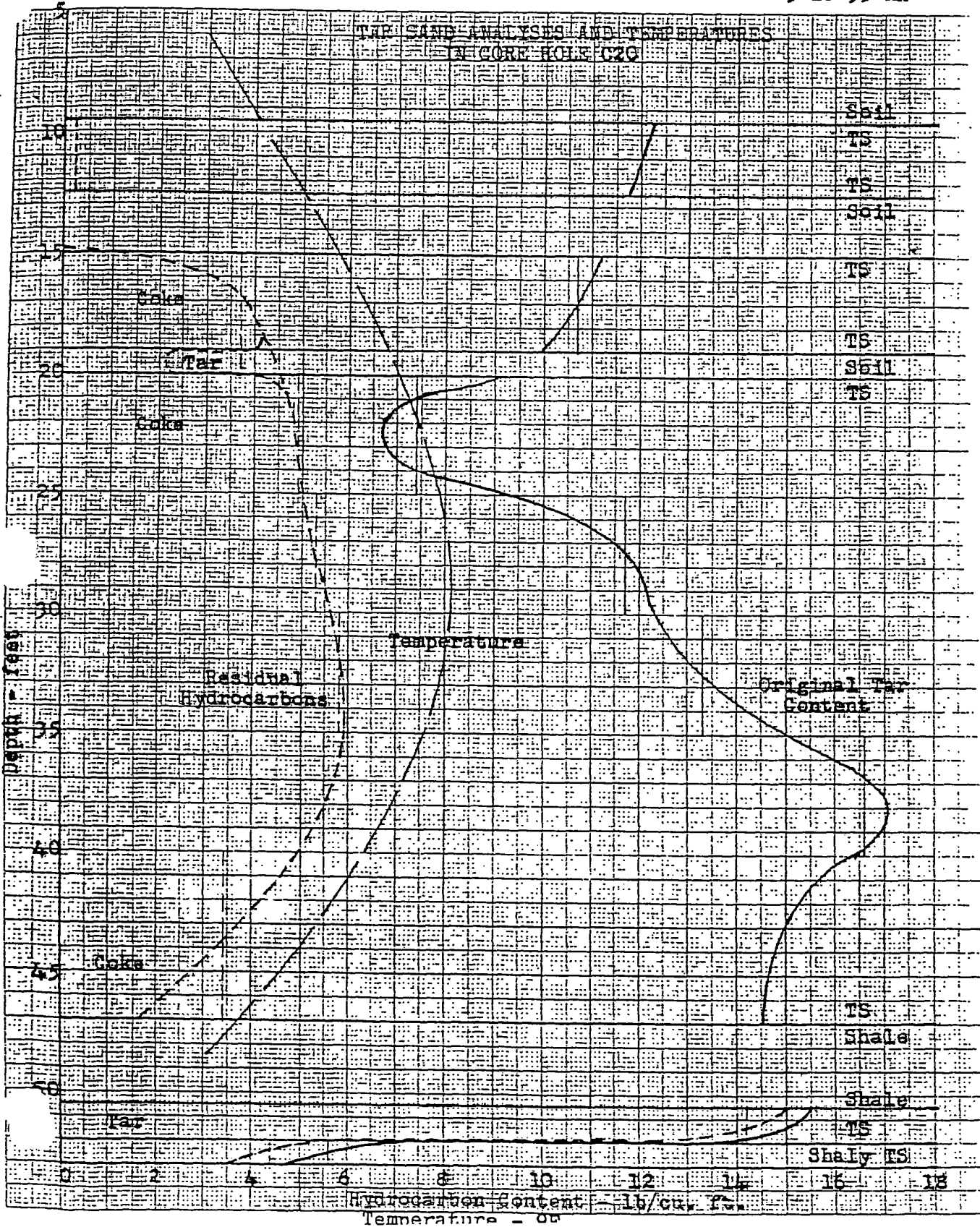


Figure 131

L9-215-21
5-18-59

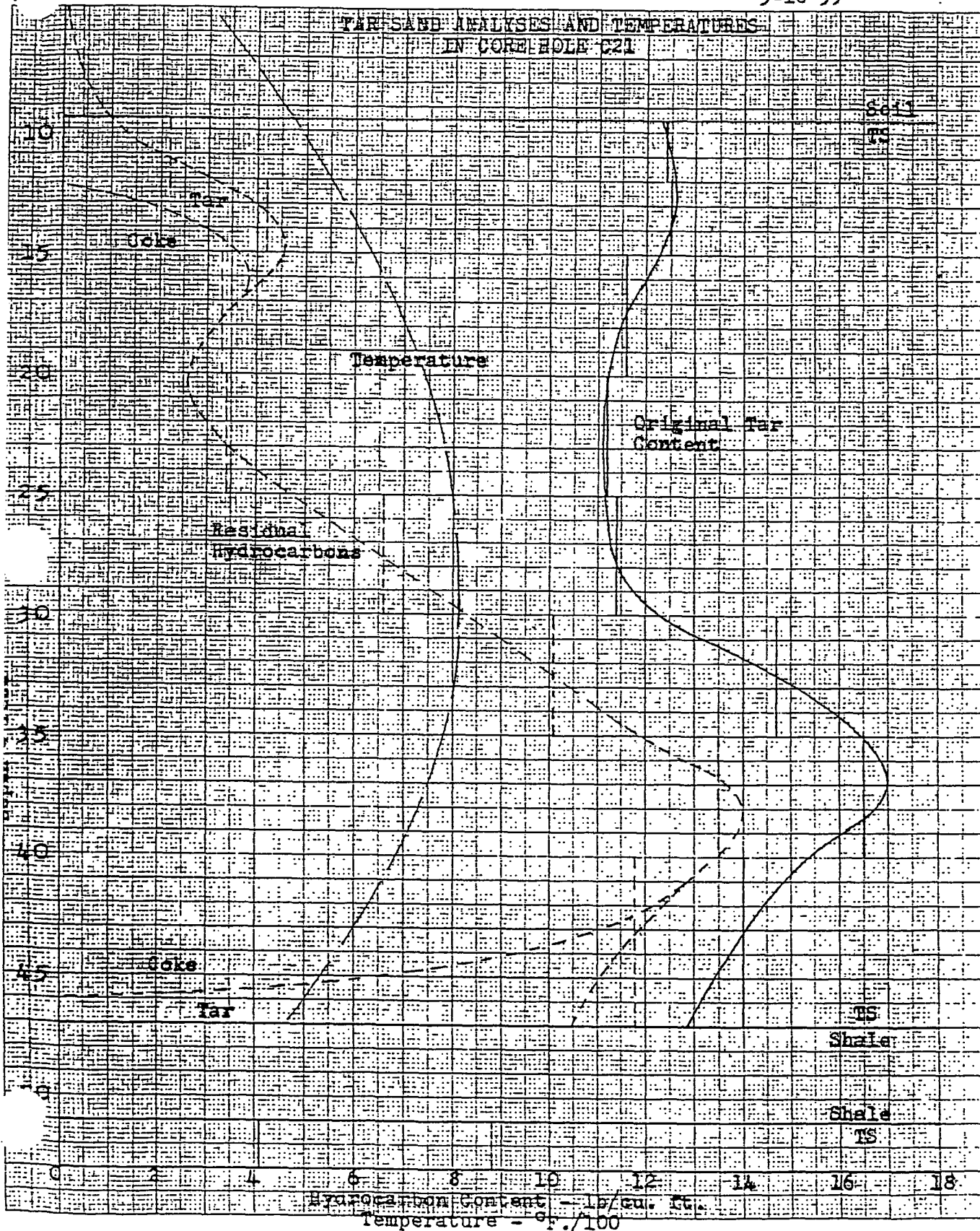


Figure 132

19-215-22
5-18-59 RH

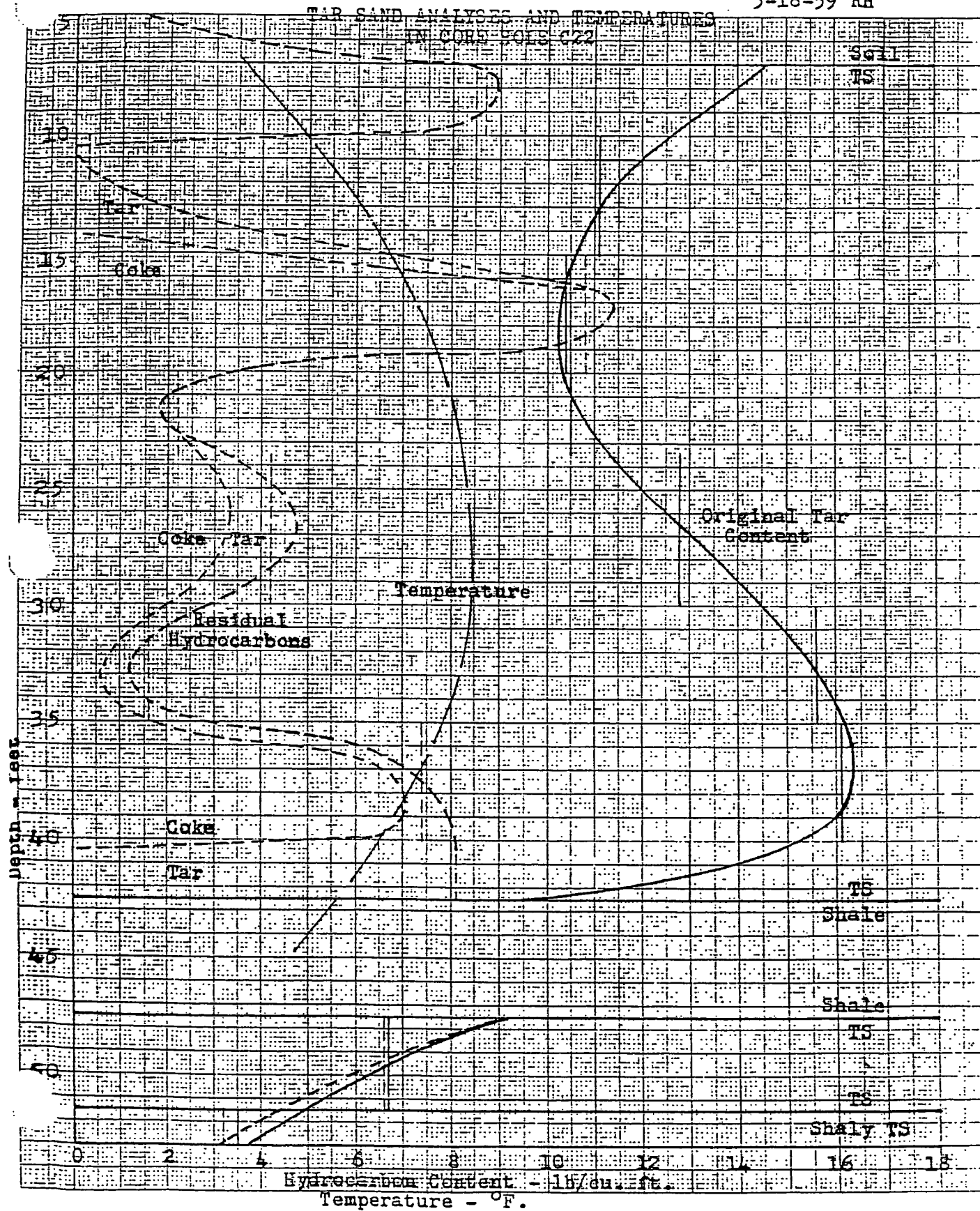


Figure 133

L9-215-23
5-18-59 RH

TAR SAND ANALYSES AND TEMPERATURES
IN CORE HOLE C23

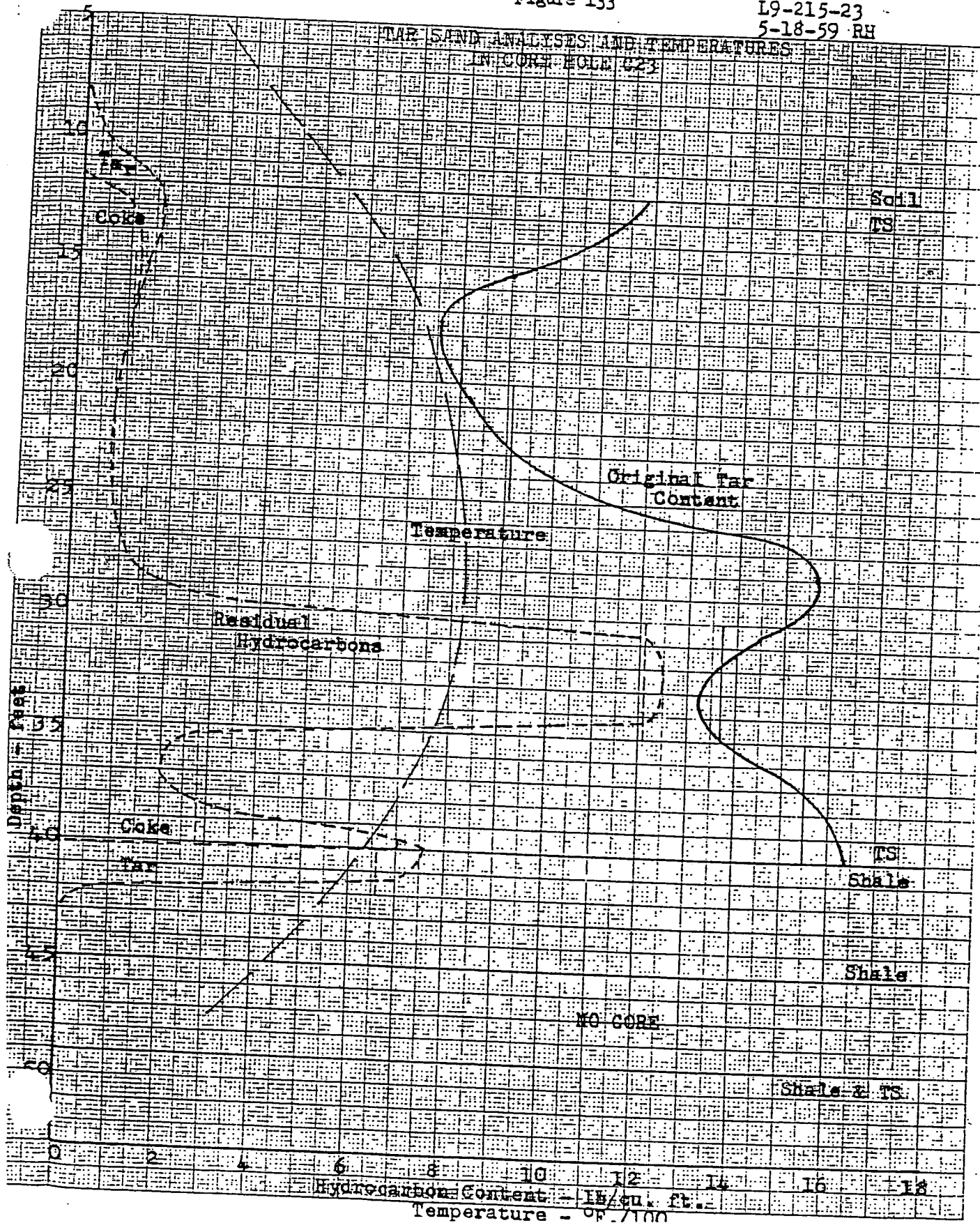
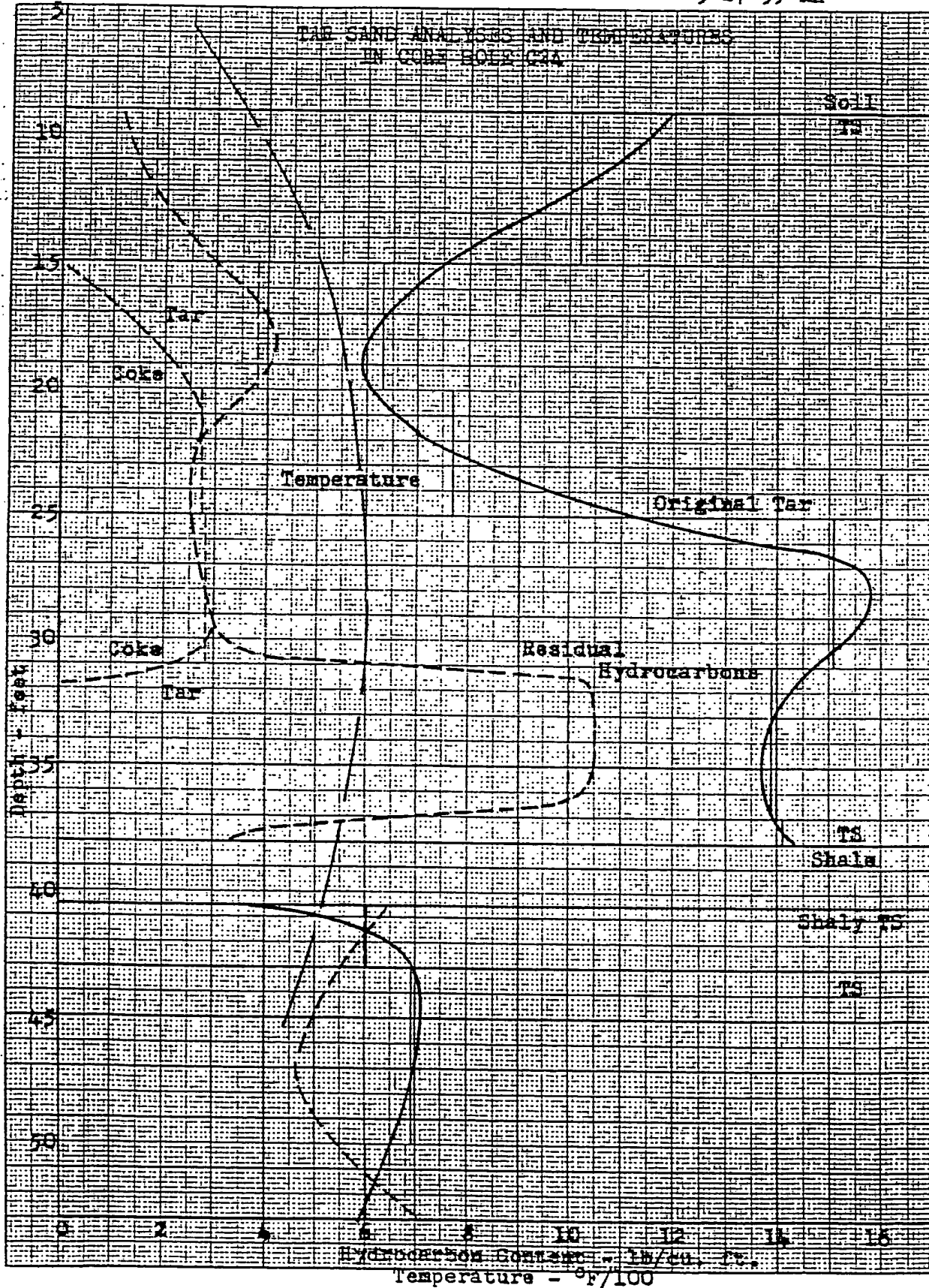


Figure 134

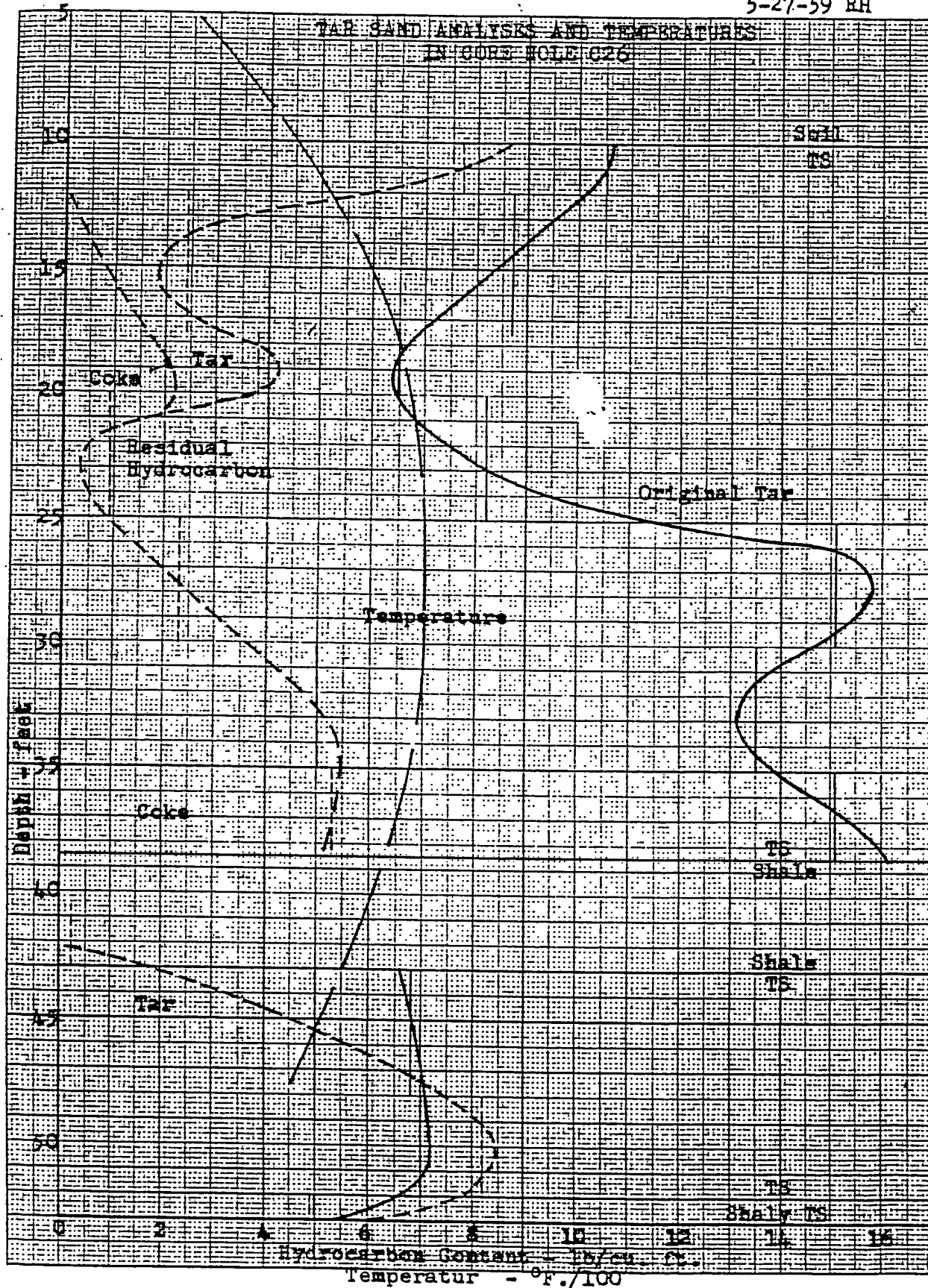
L9-215-24
5-27-59 RH



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Figure 135

L9-215-26
5-27-59 RH



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MILLIMETER

Figure 136

L9-215-27
5-18-59 RH

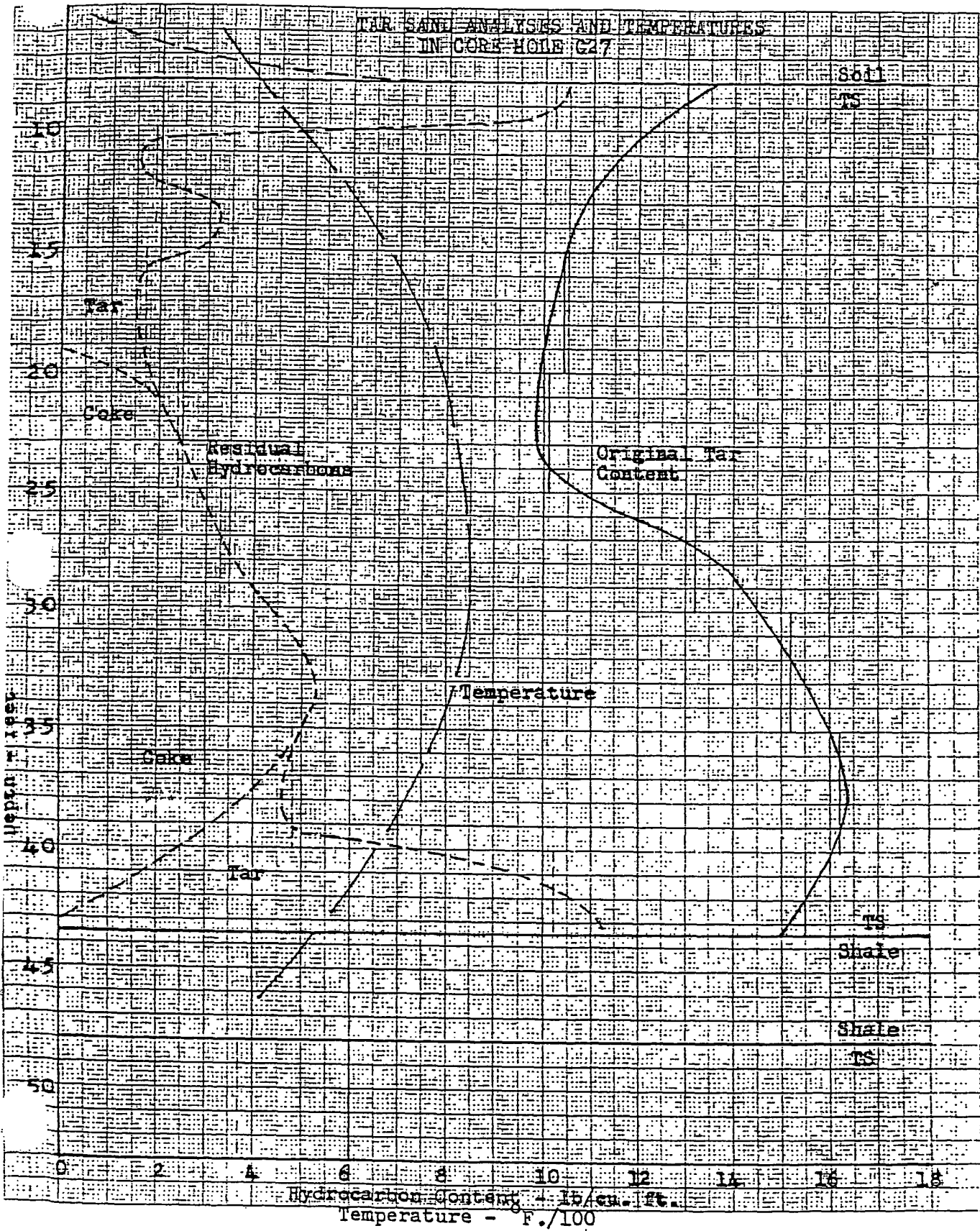


Figure 137

19-215-28
5-18-59 RH

TAR SAND ANALYSES AND TEMPERATURES
IN CORE HOLE C28

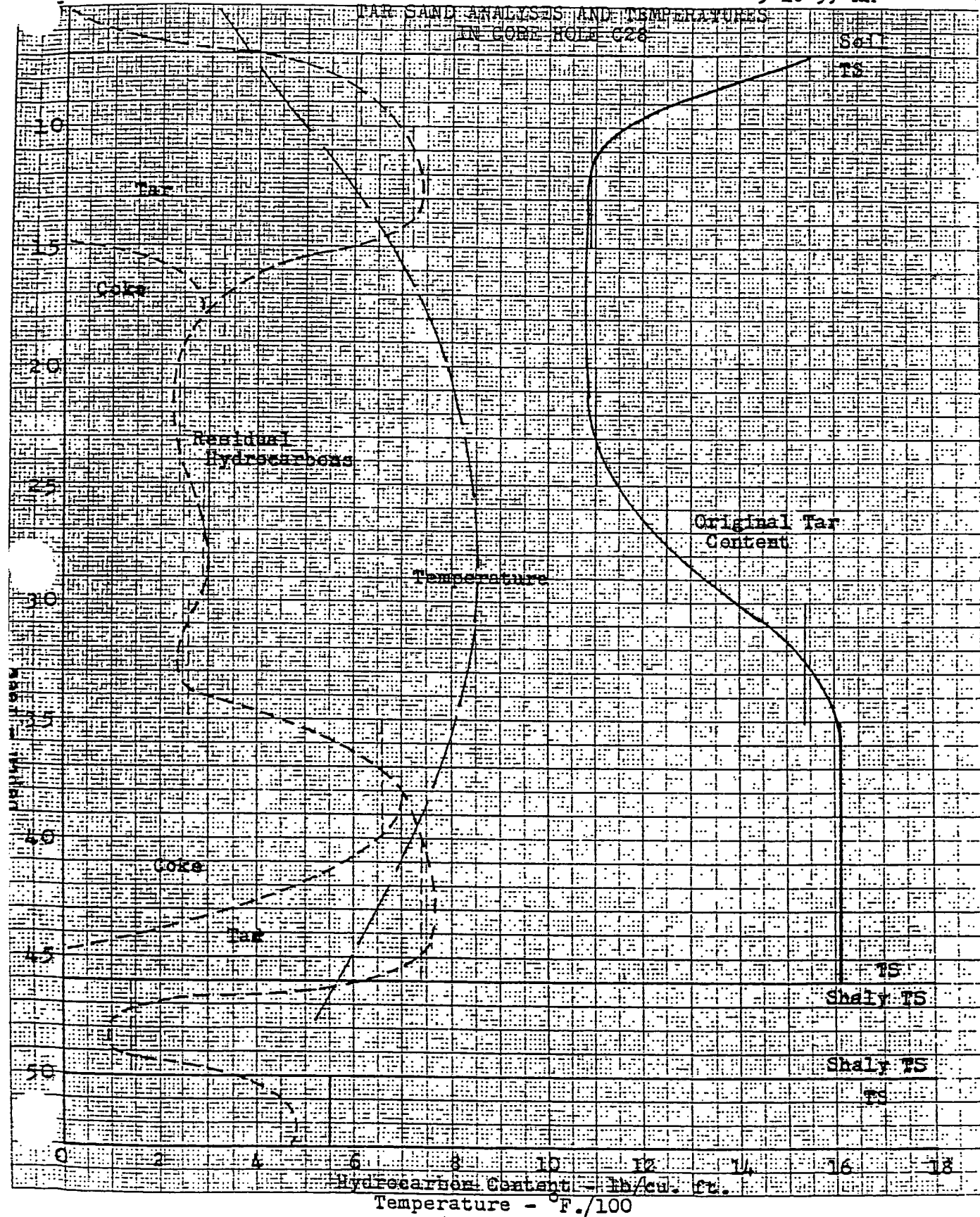


Figure 138

TAR SAND ANALYSES
AND TEMPERATURES
IN CORE BOYD C29

19-215-29
5-18-59 RH

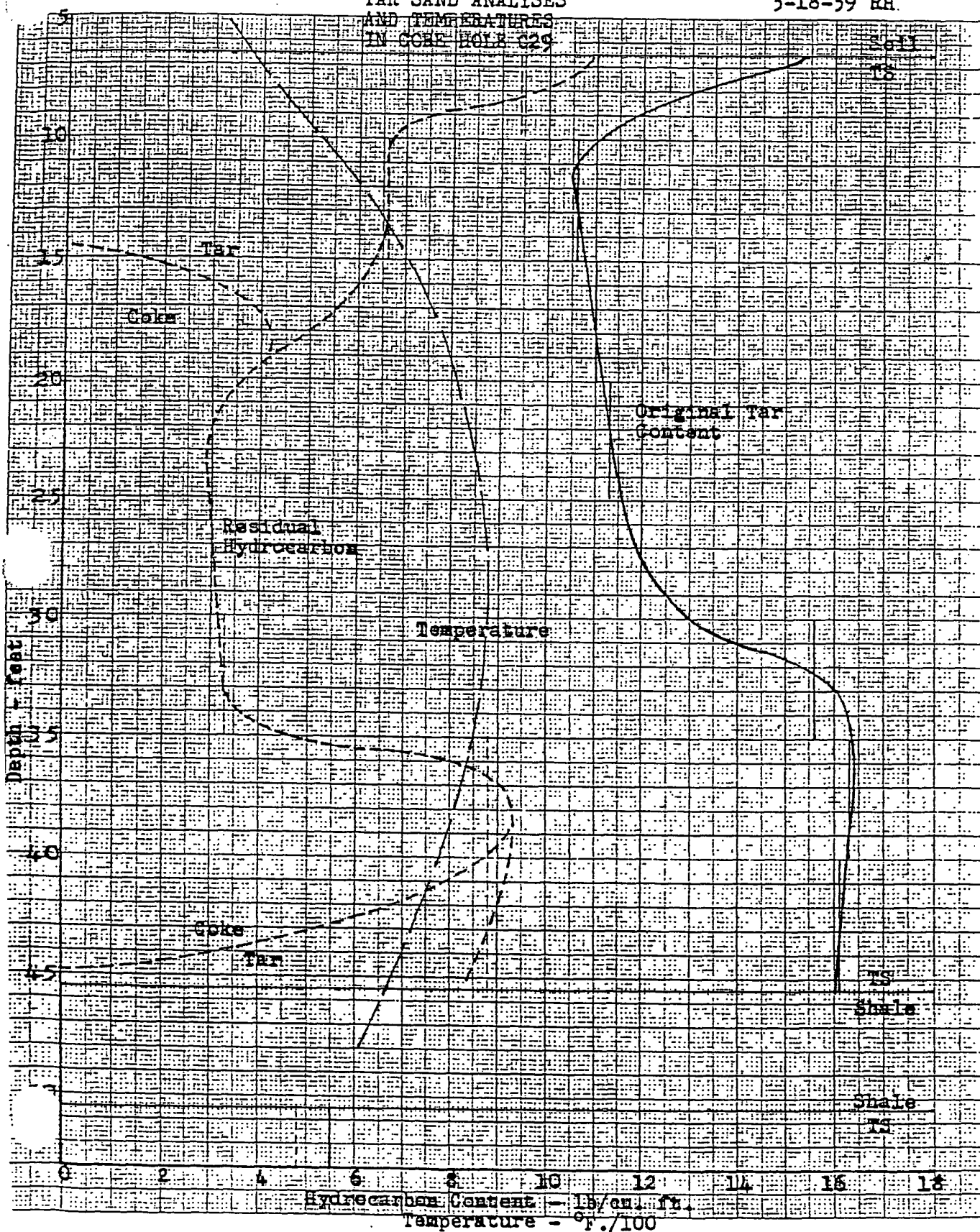


Figure 139

TAR SAND ANALYSES IN CORE HOLE C30

L9-215-30
5-18-59 RH

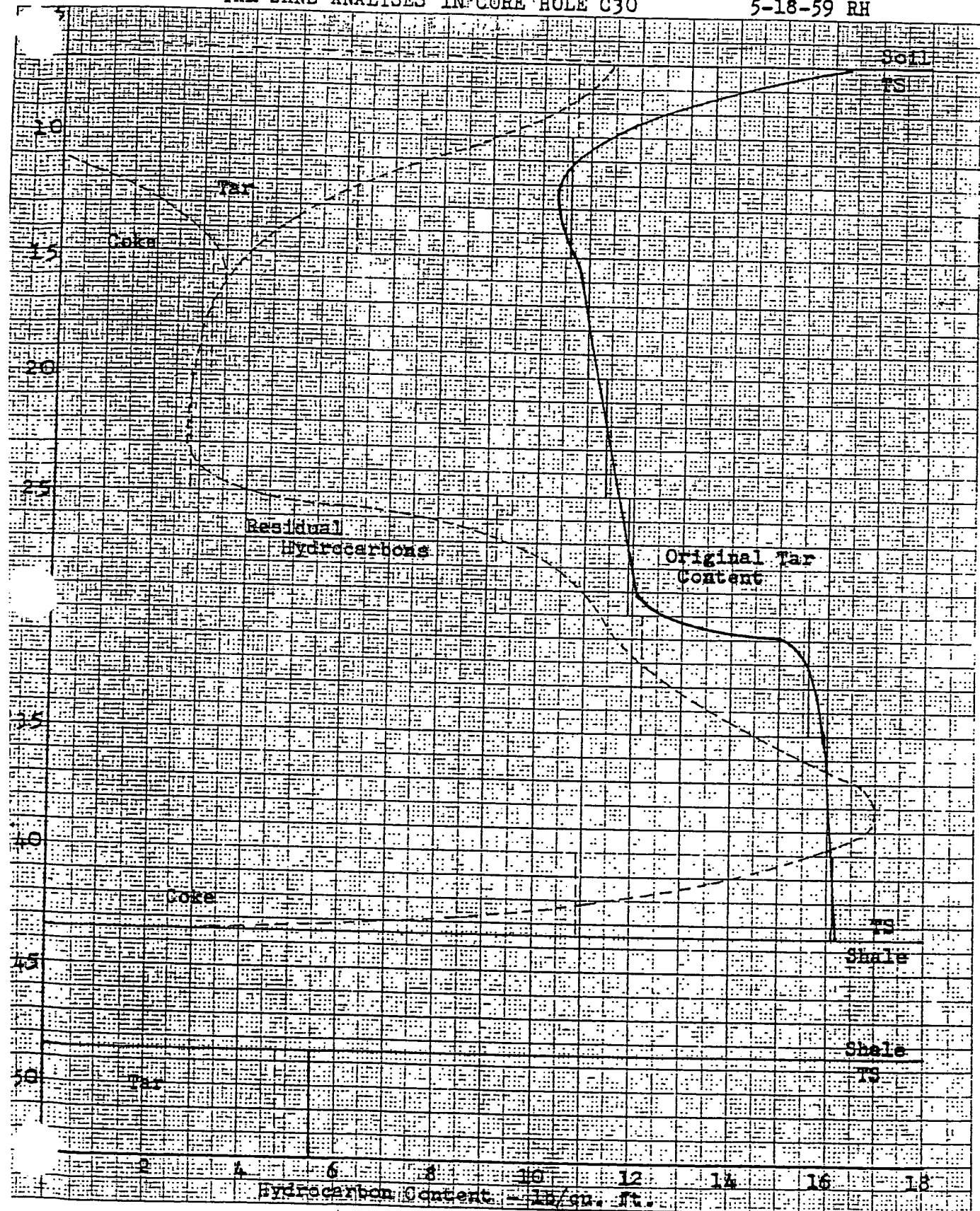


Figure 140

L9-215-31
5-18-59 RH

TAR SAND ANALYSES AND TEMPERATURES
IN CORE HOLE 1031

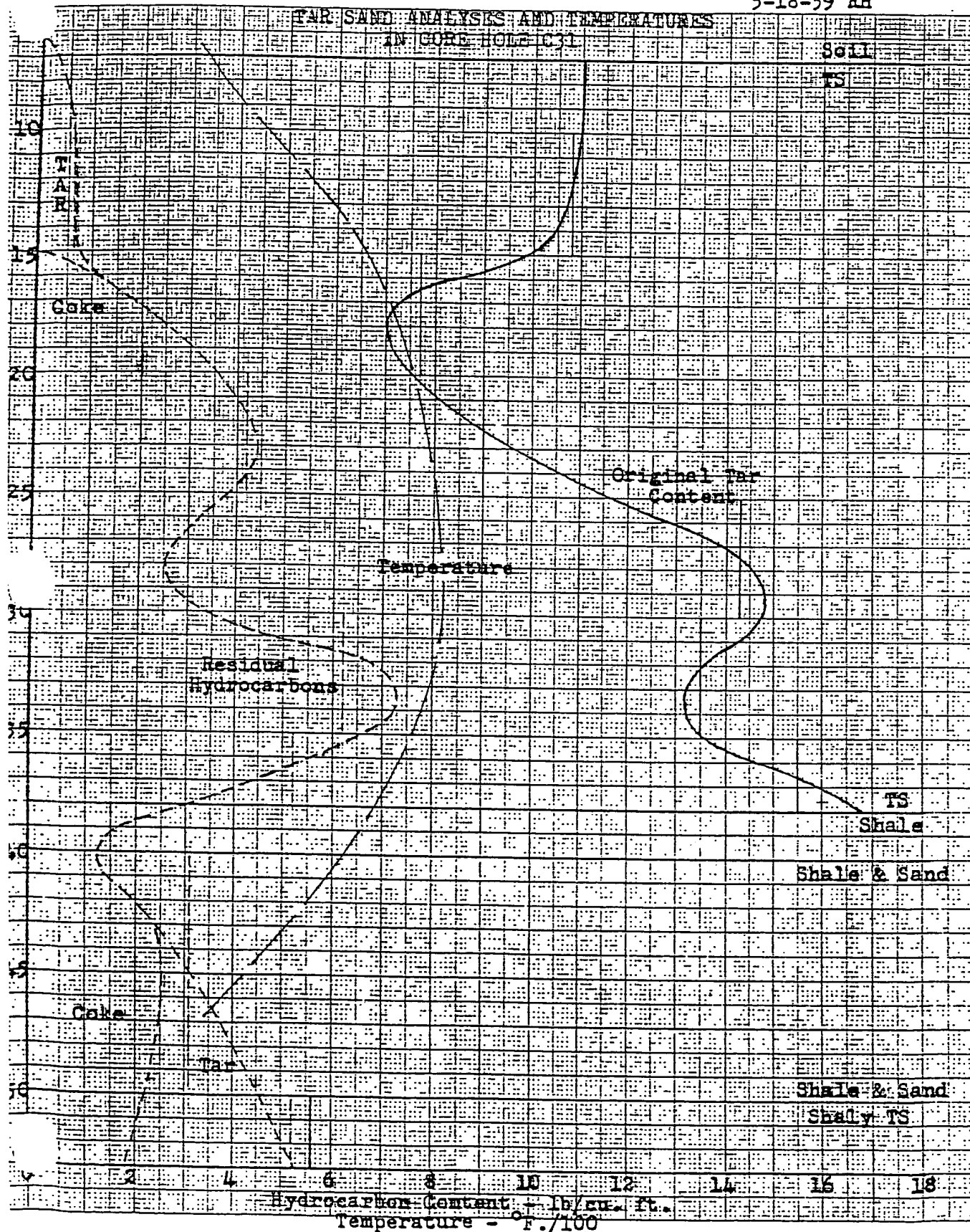
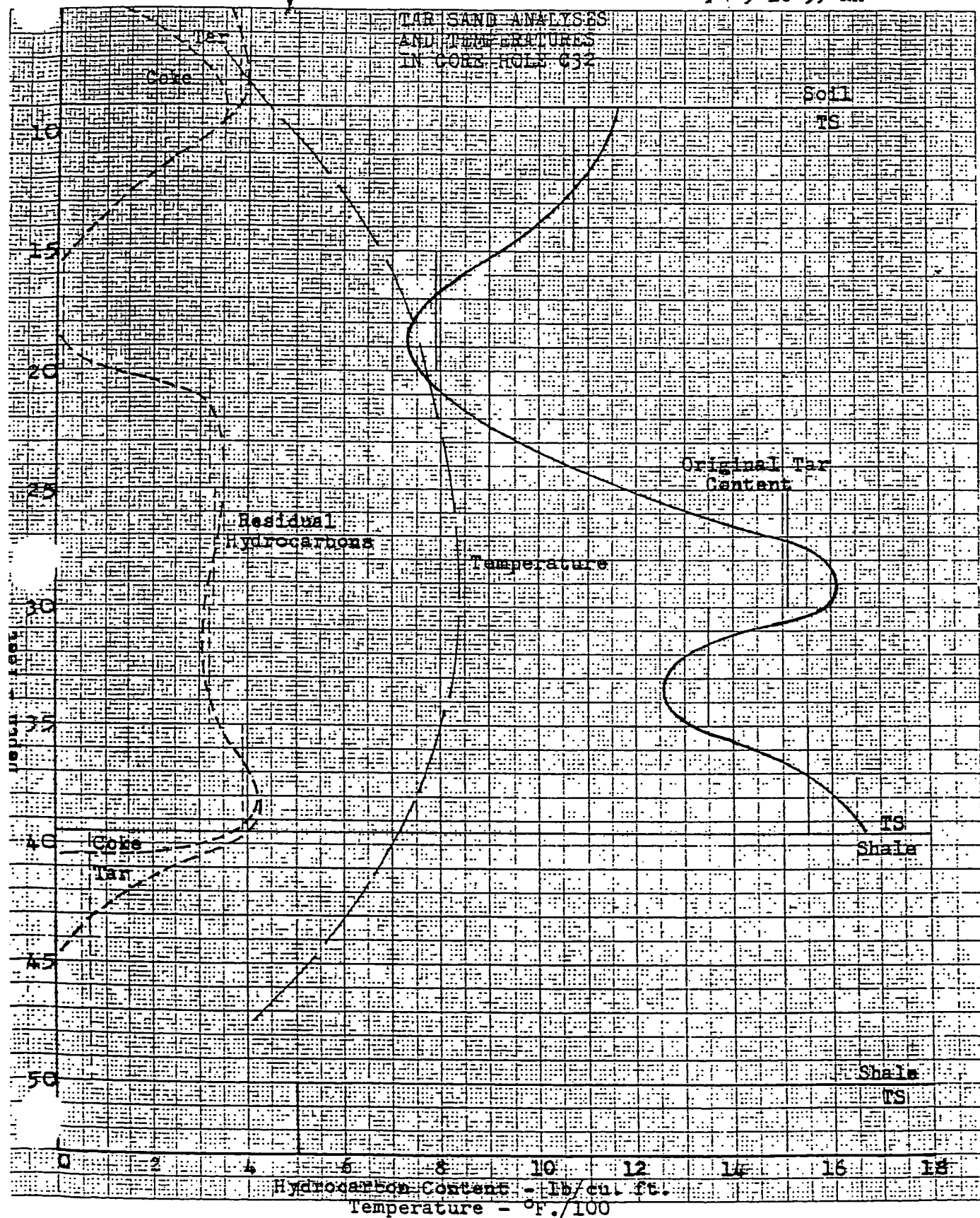


Figure 141

L9-215-32
5-18-59 RH



L9-215-33
5-18-59 RH

Figure 140

TAR SAND ANALYSES
AND TEMPERATURES
IN CORE HOLE 033

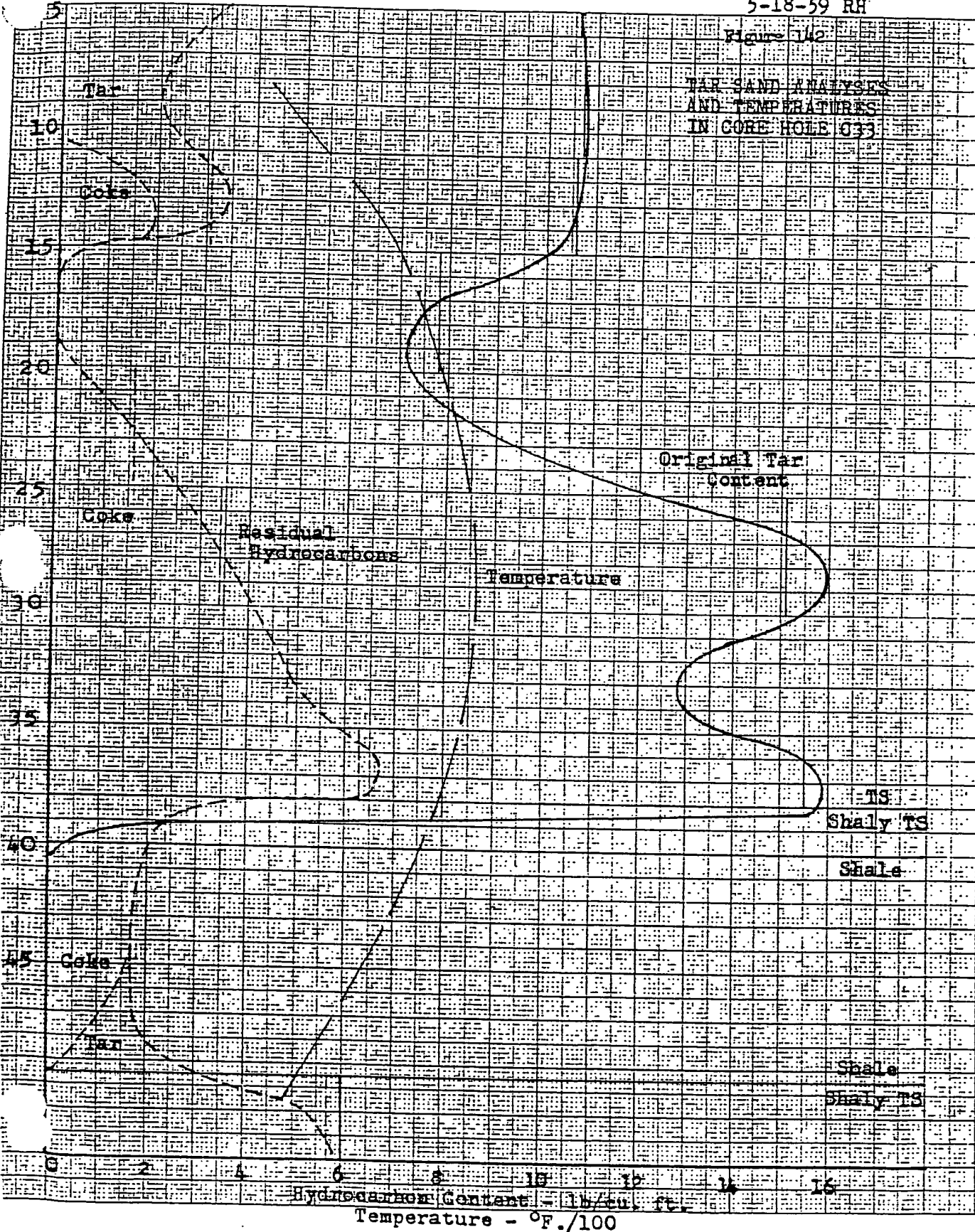


Figure 143

L9-215-34
5-19-59 RH

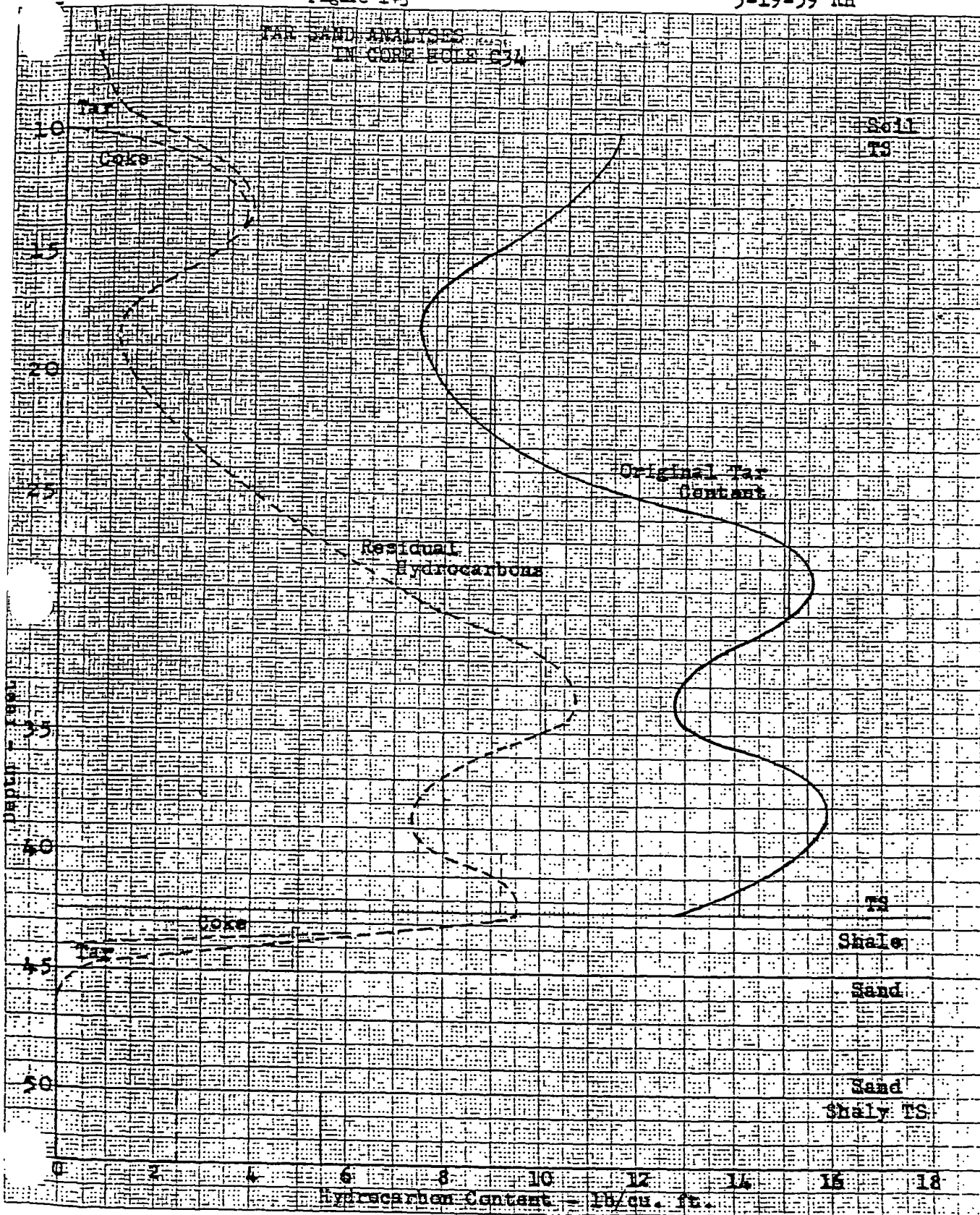


Figure 144

L9-215-35
5-27-59 RH

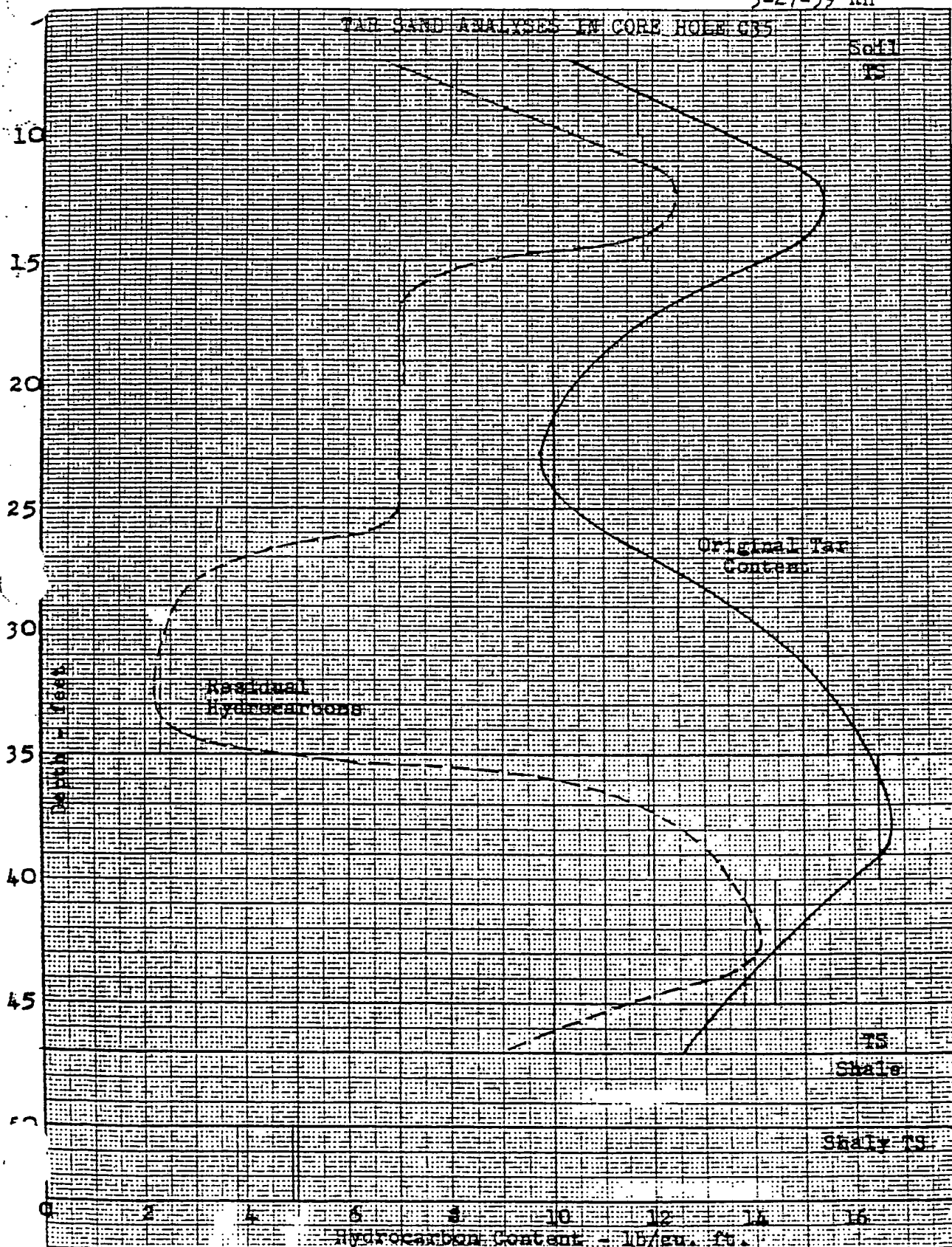


Figure 145

L9-216-1
5-18-59 RH

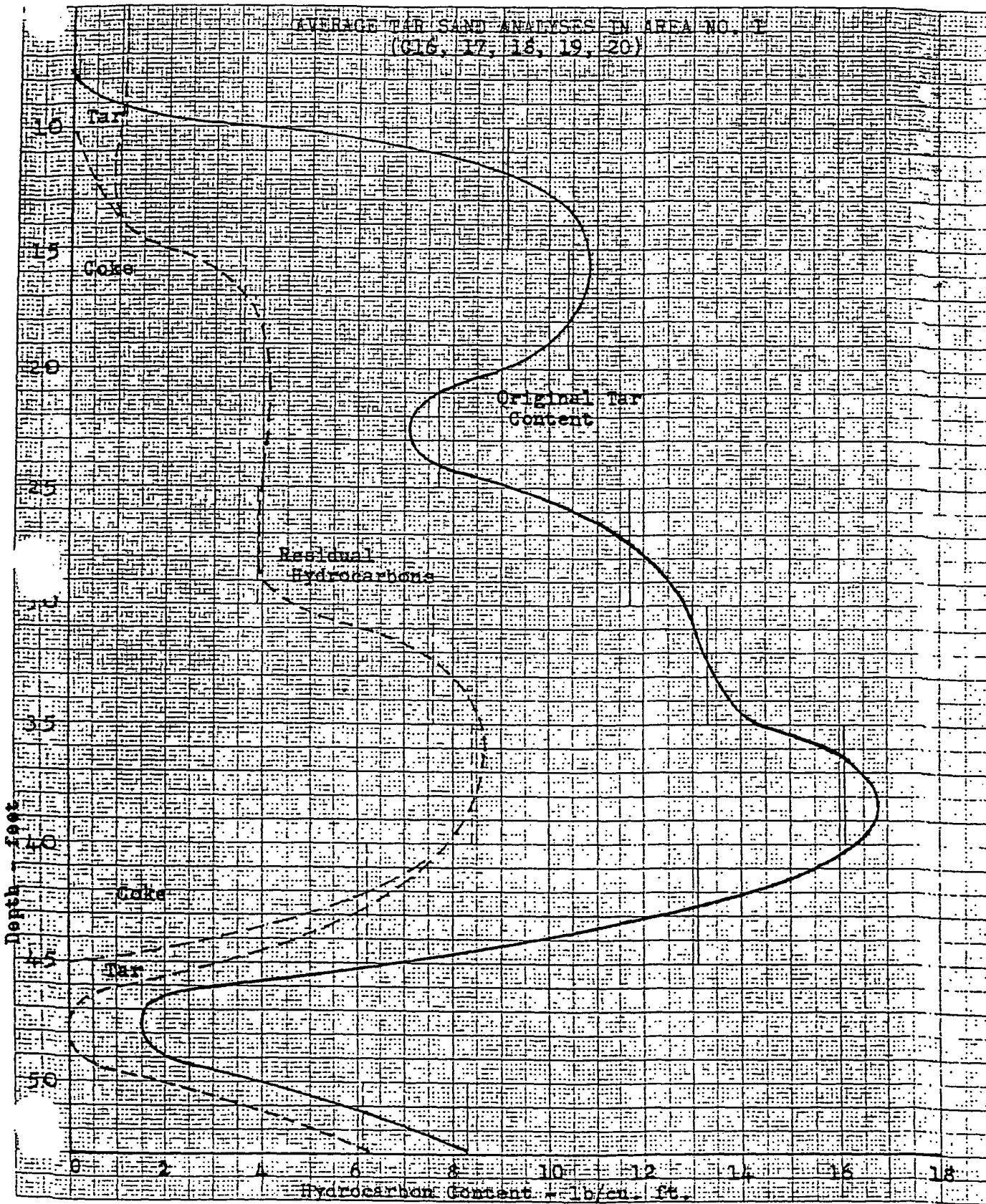


Figure 146

L9-216-2
5-18-59 RH

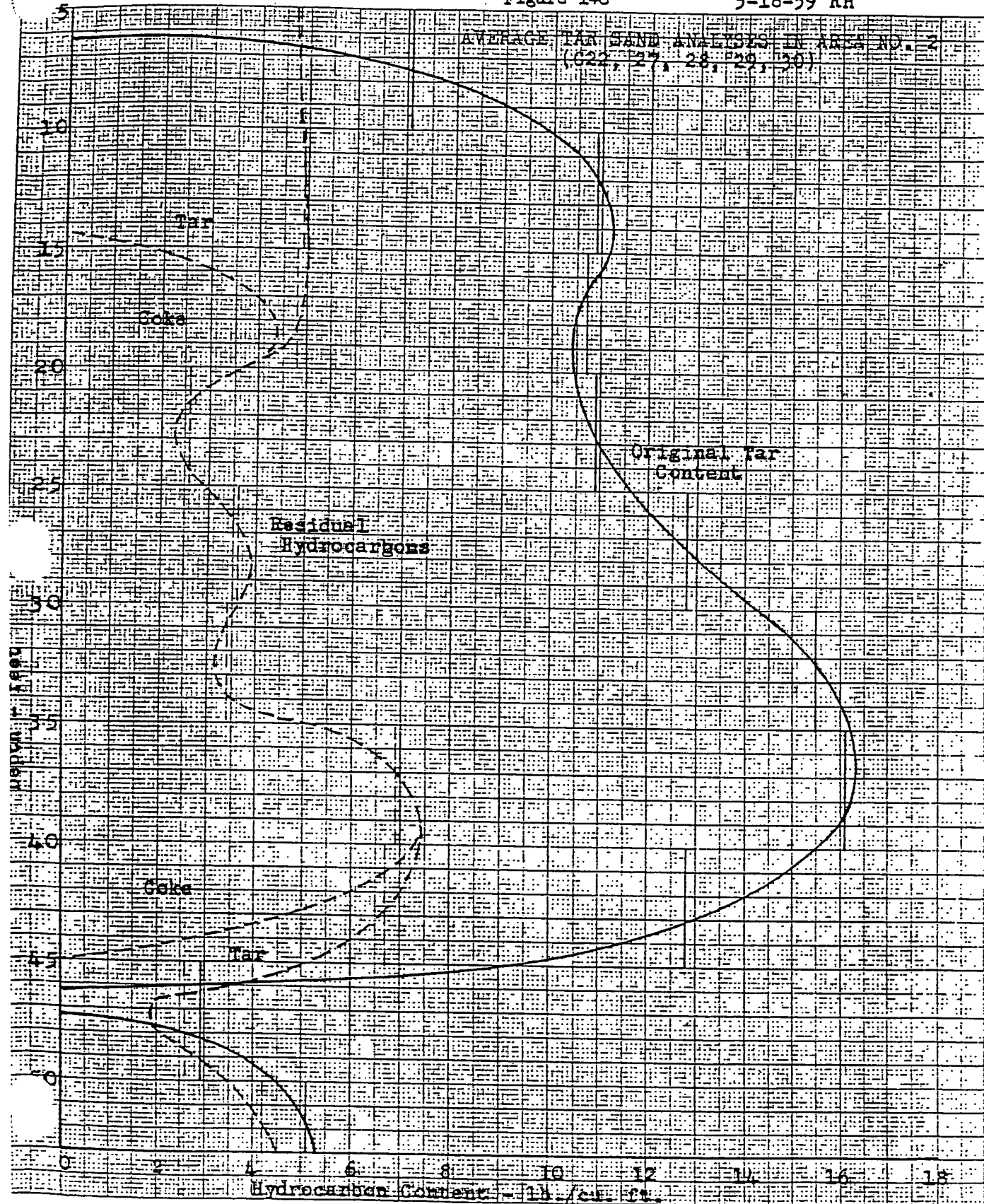


Figure 147

L9-216-3
5-18-59 RH

HYDROCARBON TARS AND ANALYSES IN AREA NO. 1
(02, 31, 32, 33, 34)

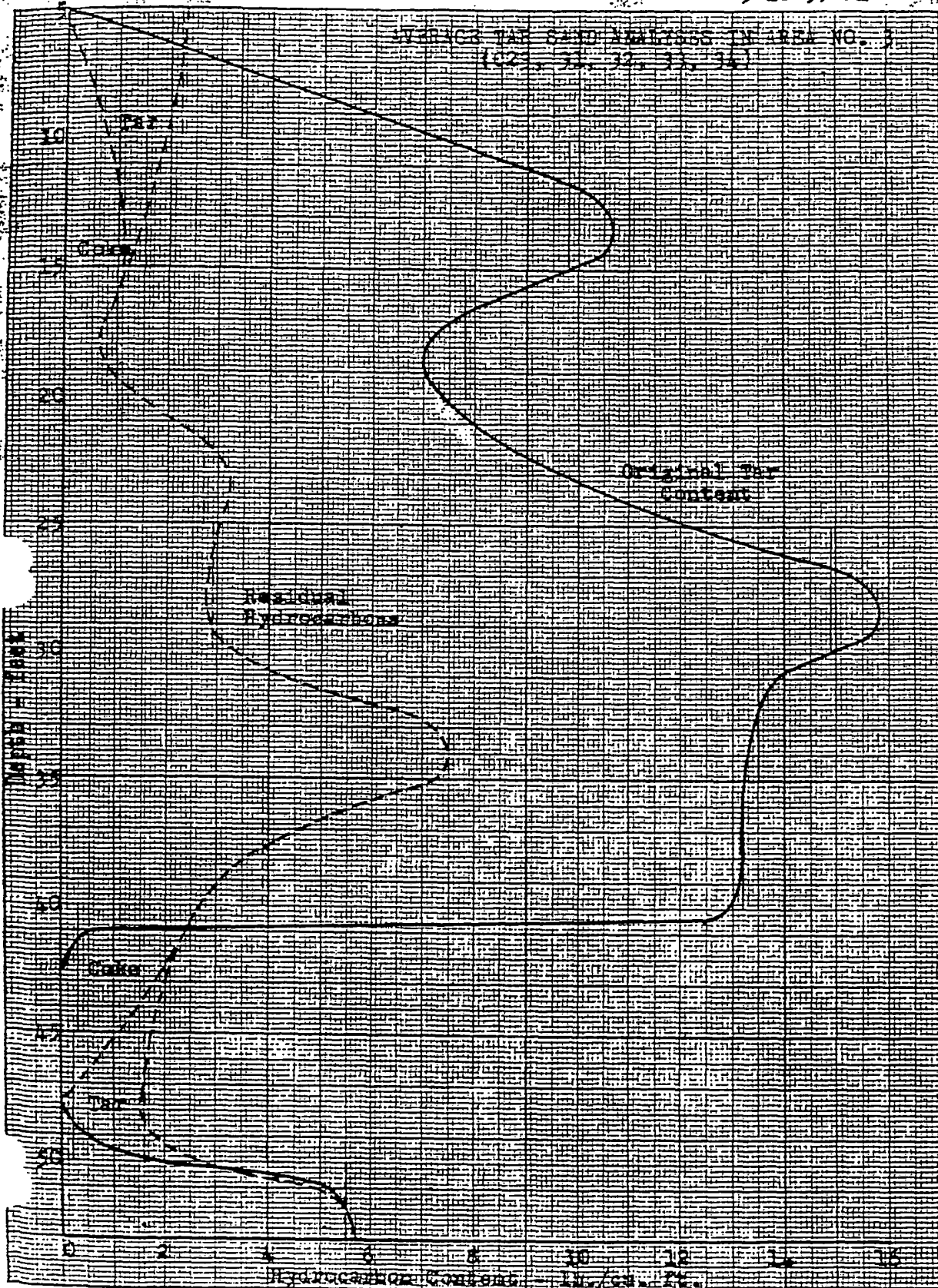


Figure 148

L9-703
5-14-59 RH

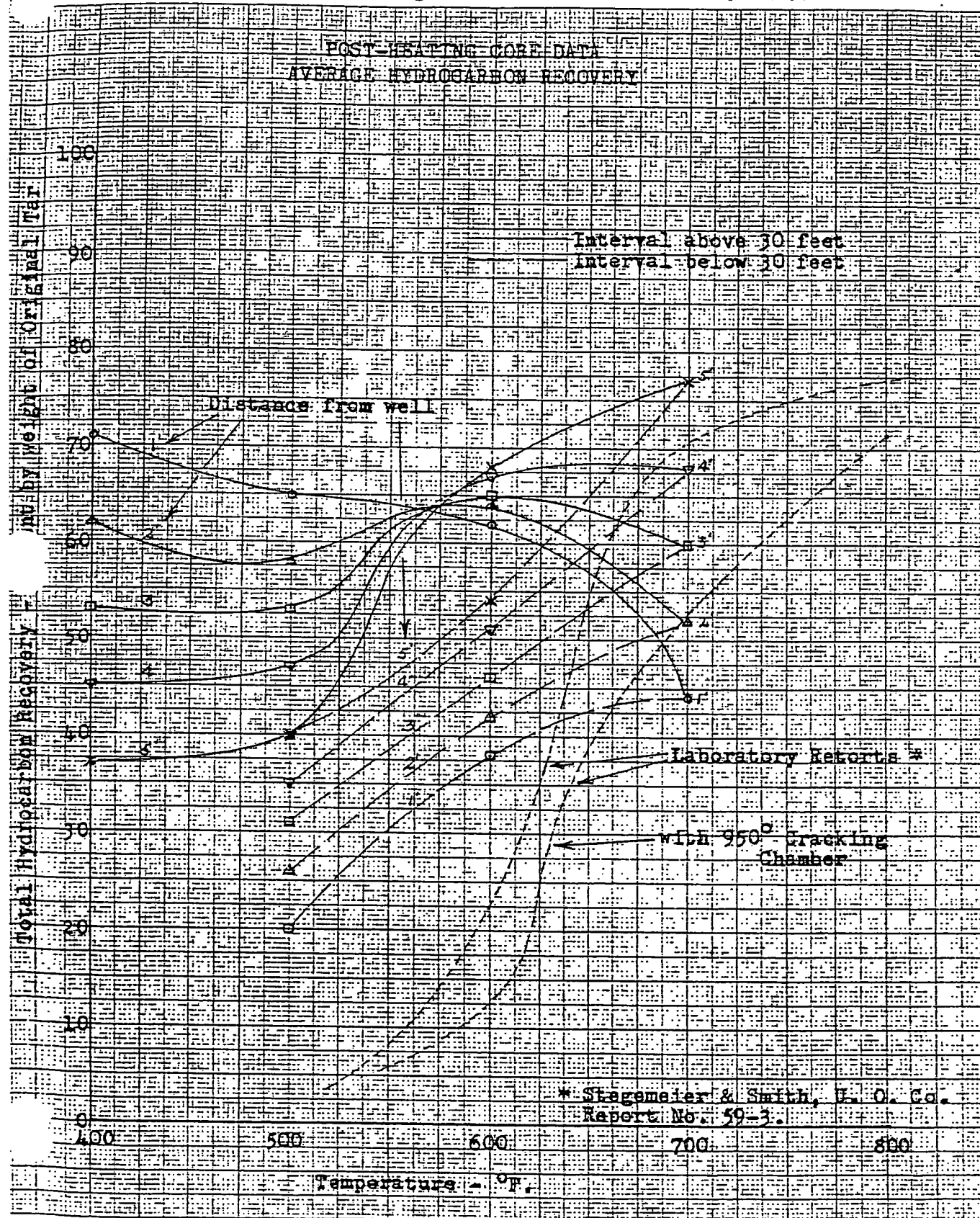


Figure 149

L9-704
5-14-59 RH

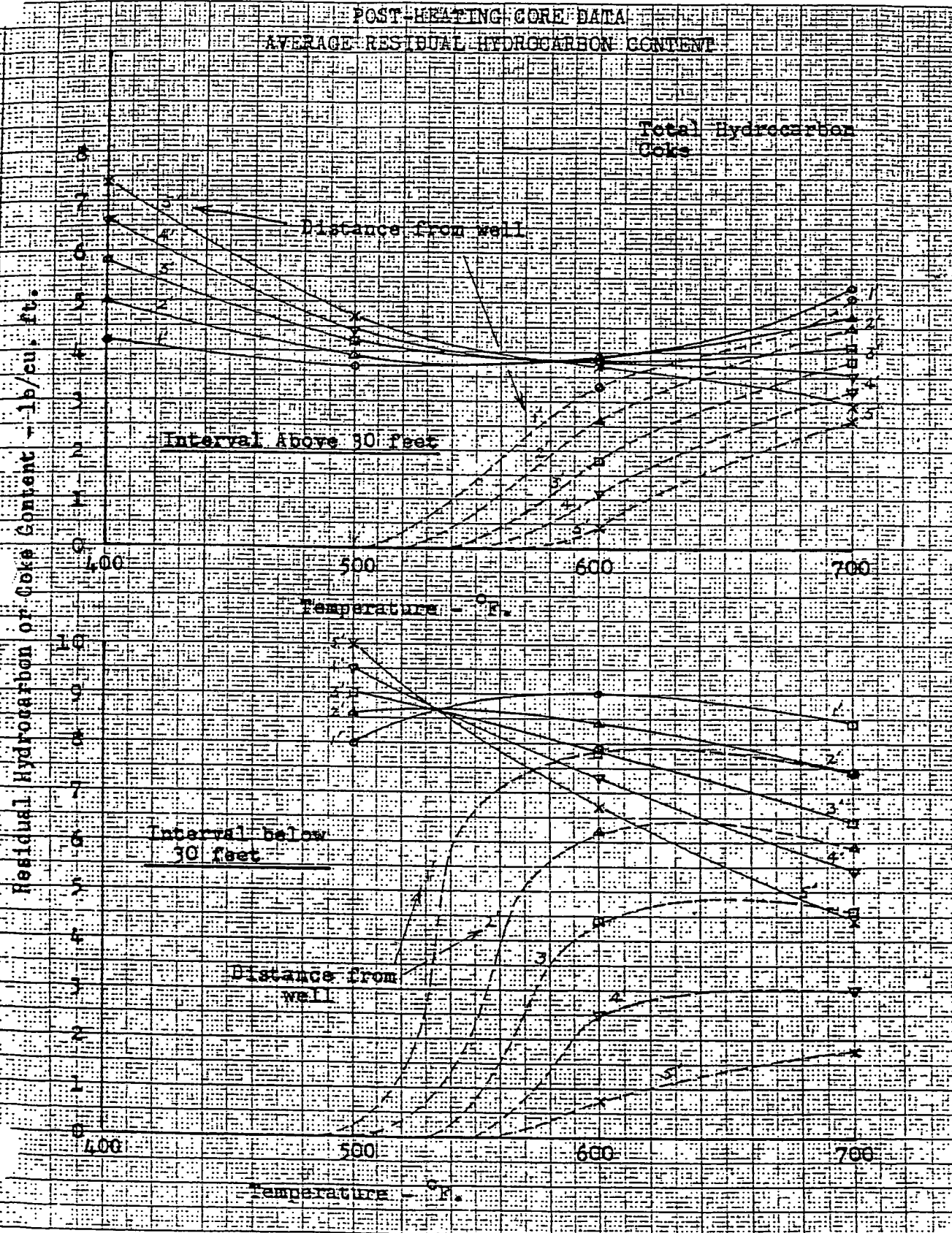


Figure 150

L9-707
5-15-59 RH

SEPARATE GAS WELL TEST IN B3-3

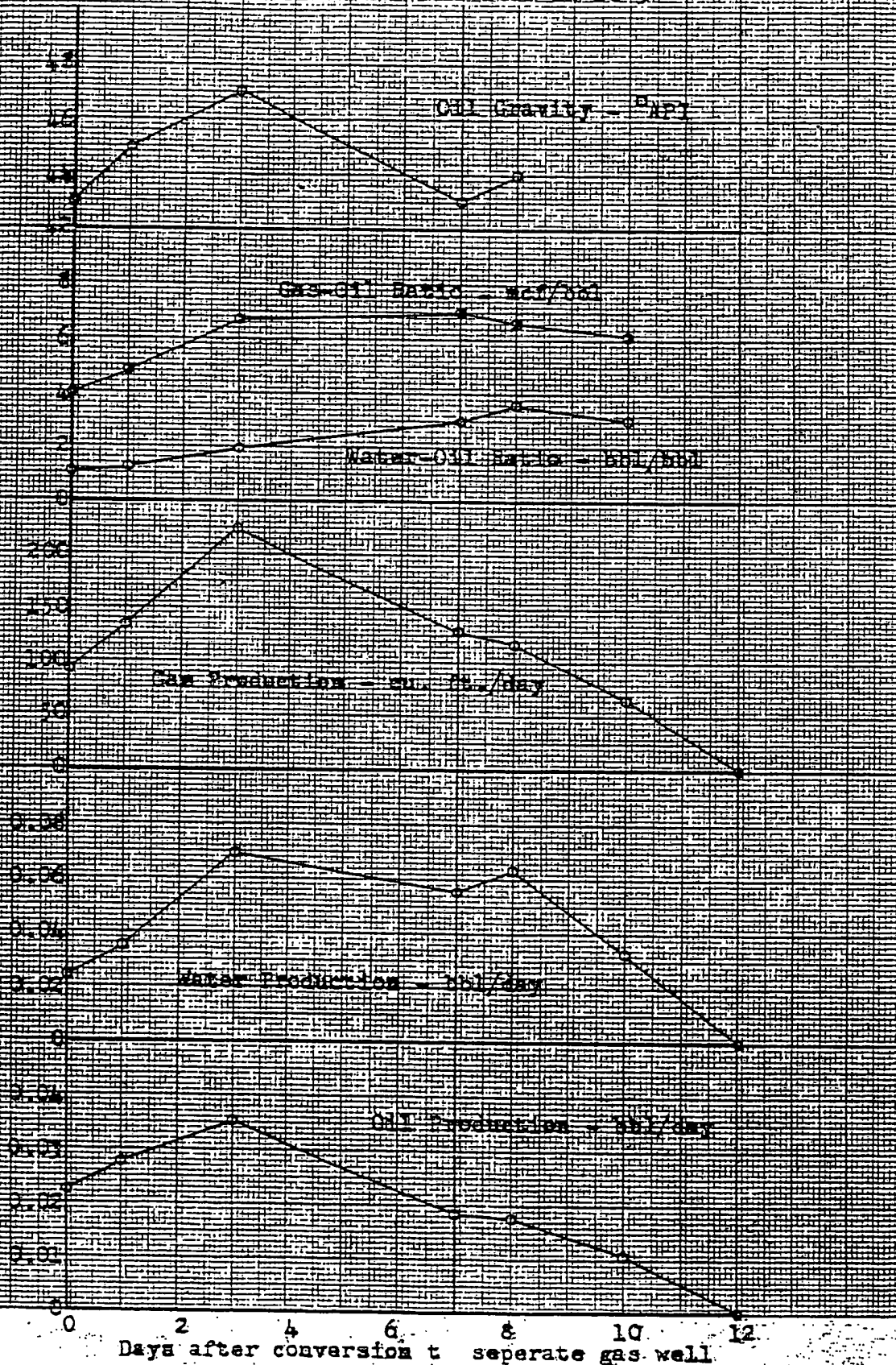


Figure 151

L9-443
5-25-59 RH

TEMPERATURES IN BS-3 BURNER CASING DURING
SEPARATE GAS WELL TEST

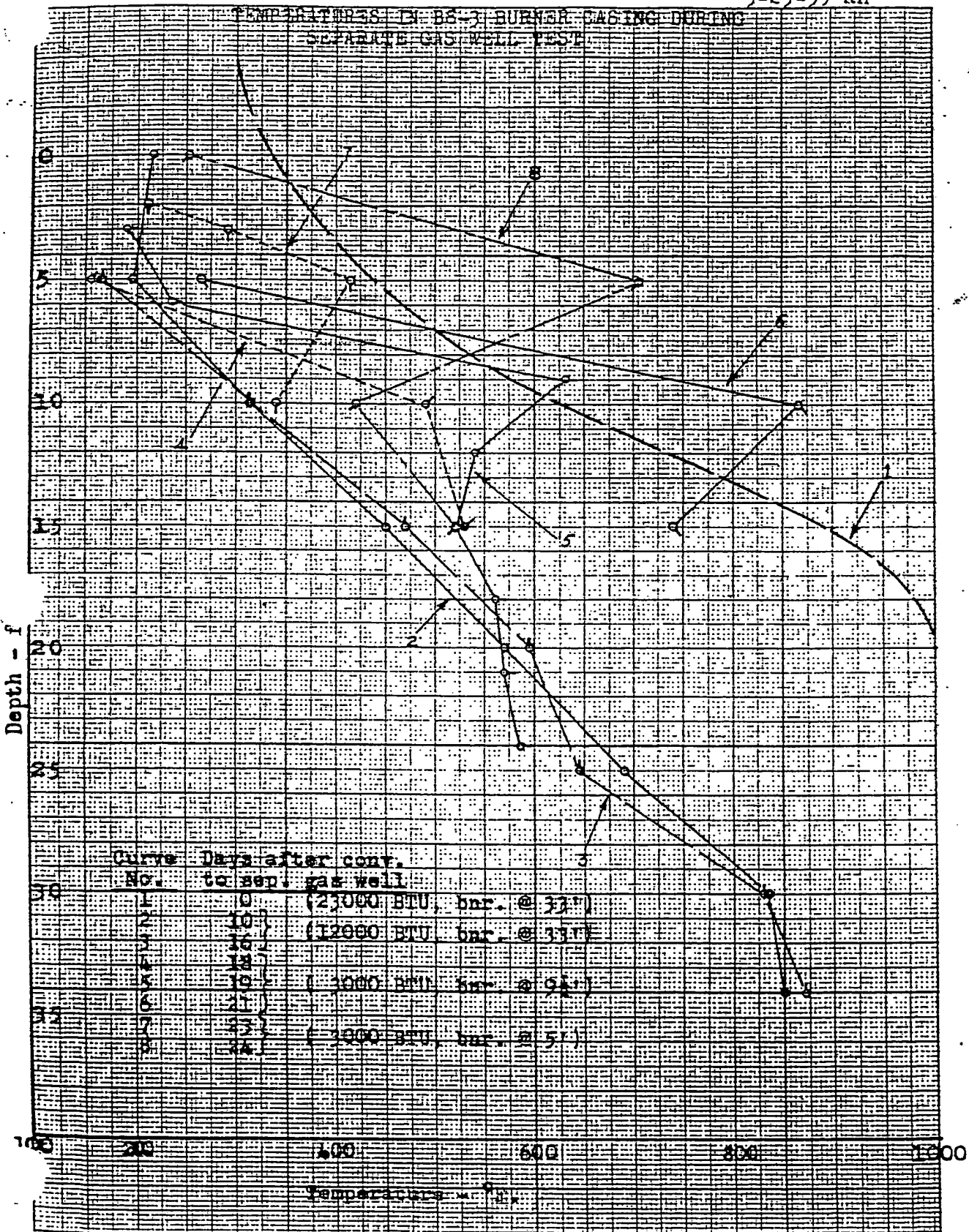
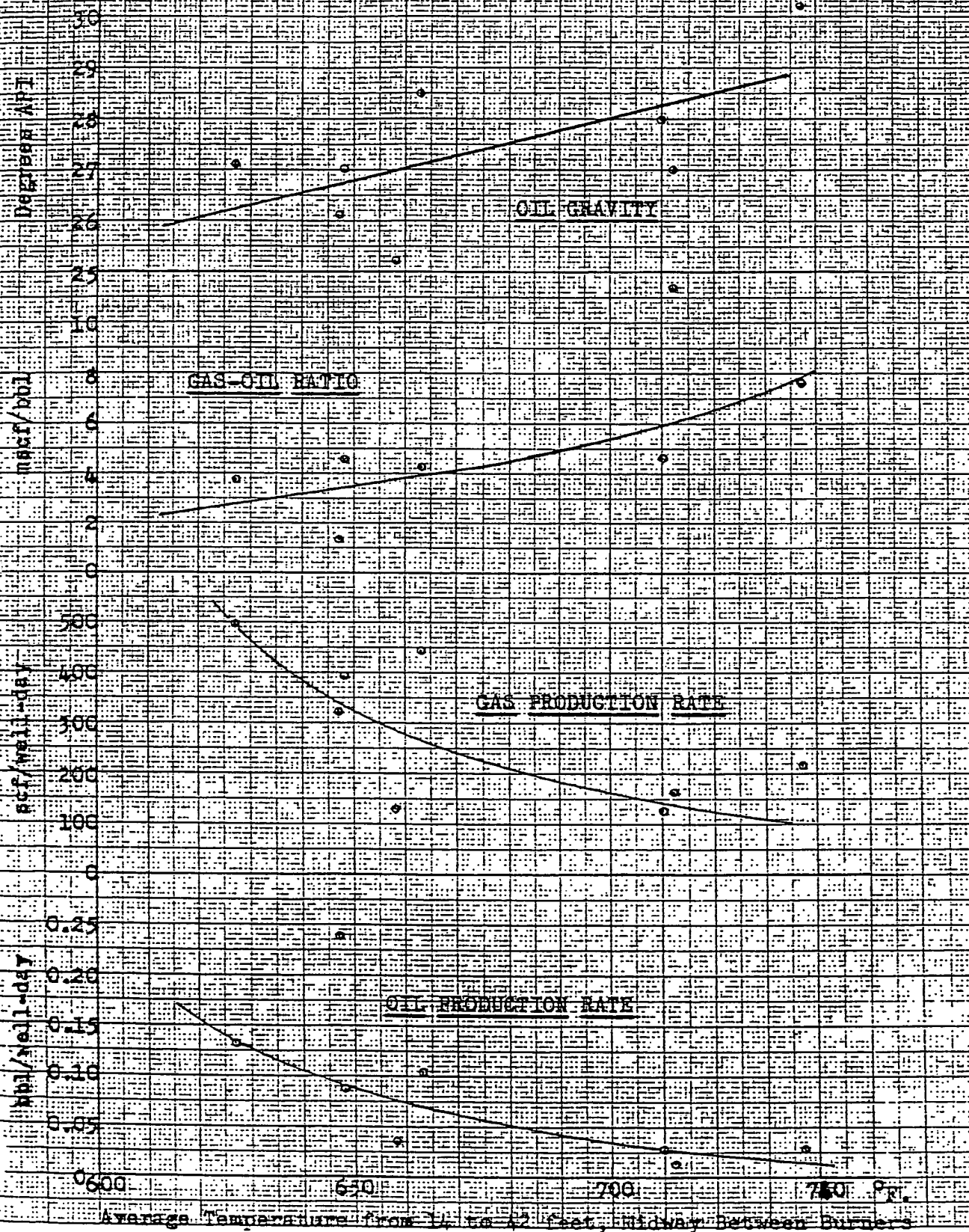


Figure 152

L9-706
5-14-59 RH

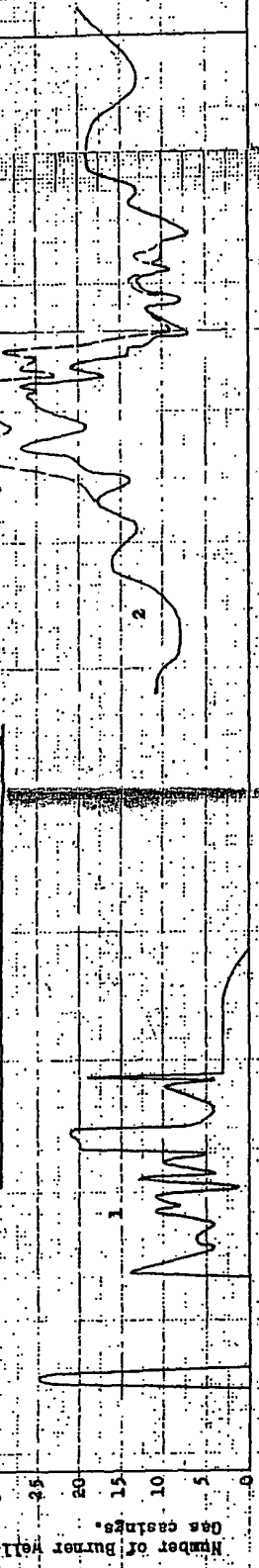
PRODUCTION TEST DATA

Inside Wells, Rows 3 to 8



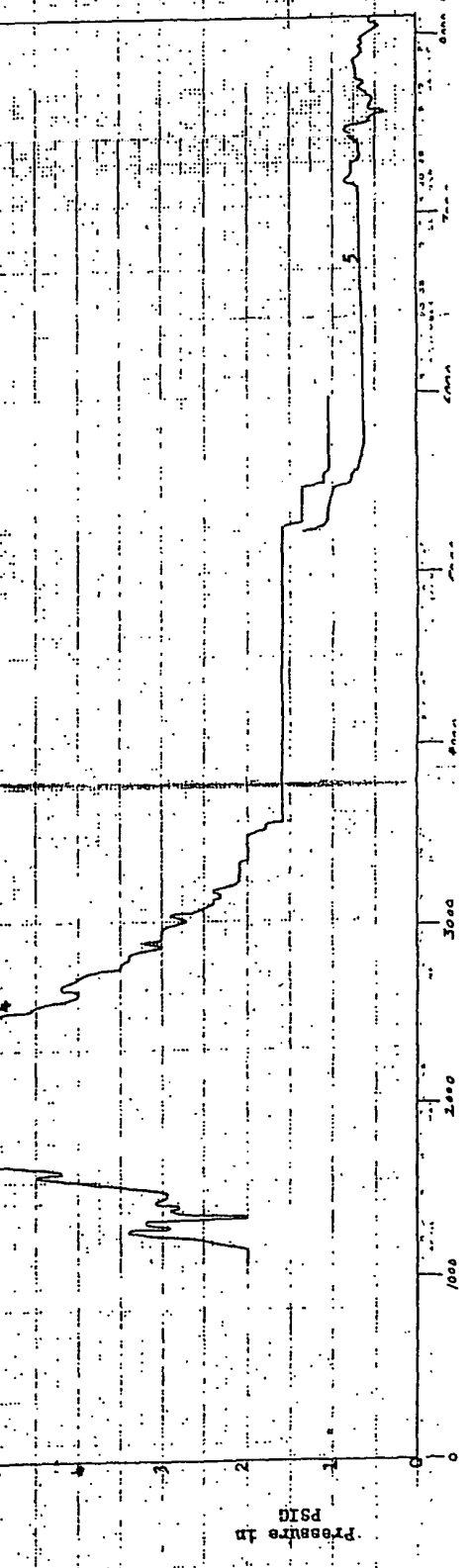
19-334.
4-16-59.BP.

Figure 153
Number of Plugged Burner Well - Gas Casings.



- Curve 1: 2" Product-lines plugged by tar.
- " 2: Burner well-gas casings plugged by tar.
- " 3: Total Burner well-gas casings off.
- " 4: Pressure at junction of main product line and branch product line #2.
- " 5: Pressure at primary separator (V10).

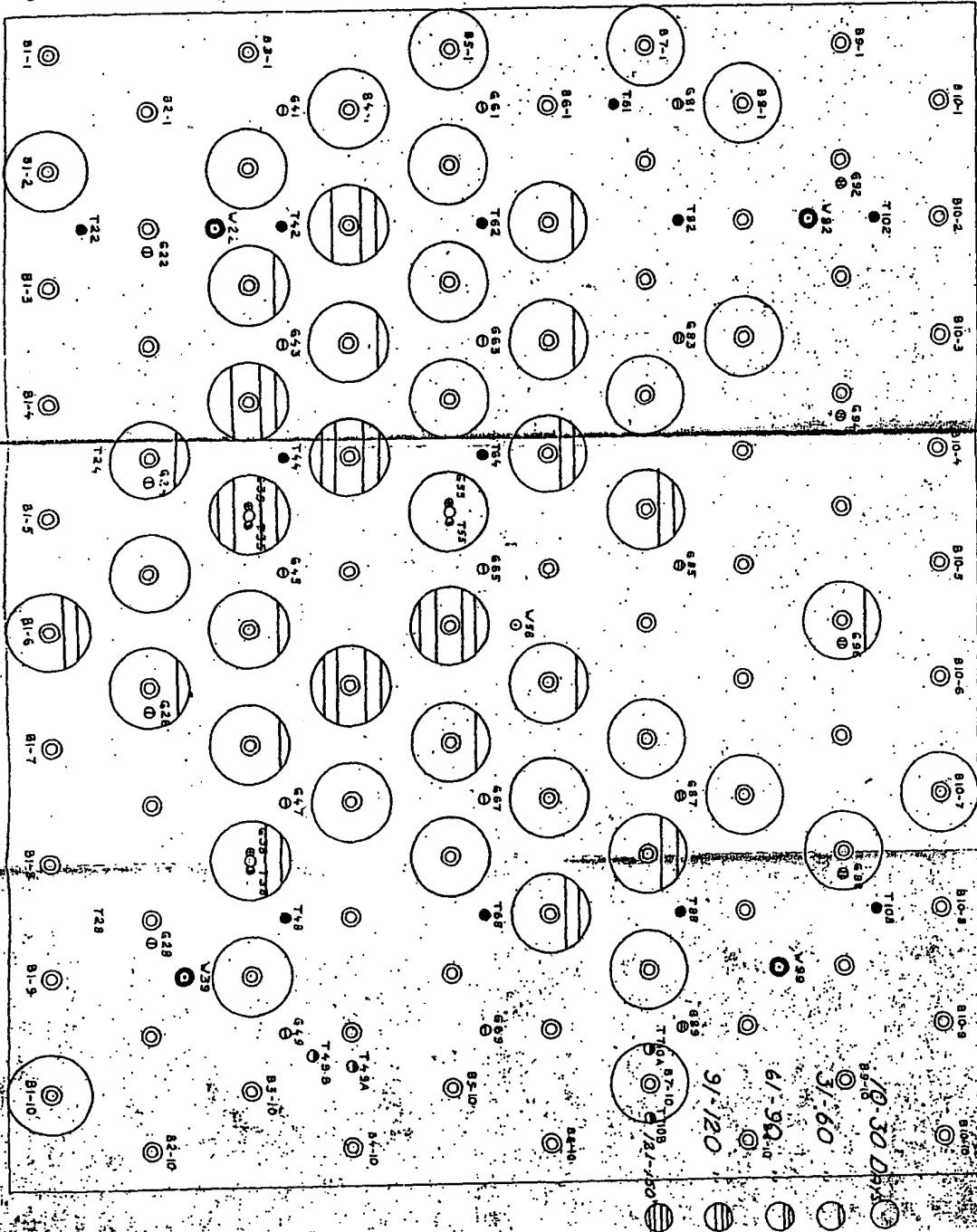
Pressure in Product-Lines.



HOLE PATTERN OF TEST L9

L 9-101
JAN. 21. 1958. B.P.
REVISED 3.15.58. B.P.

- BURNER. 15' 5 5/8" AND 40' 4 3/4" HOLE. 52' 2 1/2" CASING.
- CONCENTRIC GASWELL AROUND BURNER. 13' 4 3/8" - 4 22" CASING.
- SEPARATE GASWELL IN BURNERHOLE. 15' 1 1/2" CASING.
- 2' FROM ADJACENT BURNER. 20' 3 3/4" HOLE. 15' 1 1/2" CASING.
- 5' 9" 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- 2' 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- 5' 9" 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- CONCENTRIC GASWELL AROUND WATER WELL. 15' 4 50" - 4 22" CASING.
- WATER WELL. 5' 9" FROM ADJ. BURNER. 55' 5 5/8" HOLE. 50' 1 1/2" TUBING. W56: 75' 5 5/8" HOLE. 40' 3 1/2" AND 10' 4" TUBING.
- TEMPERATURE WELL. 5' 9" FROM ADJACENT BURNER. 55' 5 5/8" HOLE. 52' 2" CASING.
- IN BURNERHOLE. 52' 1" CASING.
- 3' (T49B 4') FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.



HOLE PATTERN OF TEST L9

L9-101
JAN. 21, 1958. BP
REVISED 3.15.58. BP

- BURNER. 15' 5 5/8" AND 40' 4 3/4" HOLE. 52' 2 1/2" CASING.
- ◎ CONCENTRIC GASWELL AROUND BURNER. 13' 4 30" - 4 22" CASING.
- SEPARATE GASWELL IN BURNERHOLE. 15' 1 1/2" CASING.
- " " " 2' FROM ADJACENT BURNER. 20' 3 3/4" HOLE. 15' 1 1/2" CASING.
- " " " 59' " " " 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- " " " 2' " " " 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- " " " 59' " " " 50' 3 3/4" HOLE FILLED WITH GRAVEL TO 15' 15' 1 1/2" CASING.
- ◎ CONCENTRIC GASWELL AROUND WATER WELL. 15' 4 30" - 4 22" CASING.
- WATER WELL. 5' 9" FROM ADJ. BURNER. 55' 5 5/8" HOLE. 50' 1 1/2" TUBING. W56: 75' 5 5/8" HOLE. 40' 3 1/2" AND 10' 4" TUBING.
- TEMPERATURE WELL. 5' 9" FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.
- " " " IN BURNERHOLE. 52' 1" CASING.
- " " " 3' (T49B 4') FROM ADJACENT BURNER. 55' 3 3/4" HOLE. 52' 2" CASING.

